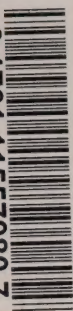


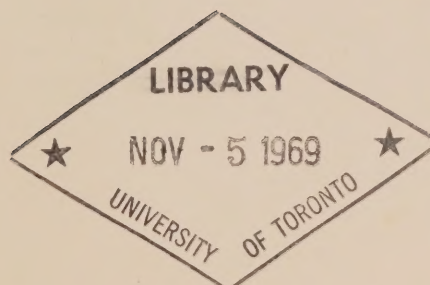
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Can. Indian Affairs and Northern
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Area economic surveys; Great
Slave Lake - South Shore

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GREAT SLAVE LAKE - SOUTH SHORE AN AREA ECONOMIC SURVEY



D. RADOJICIC

INDUSTRIAL DIVISION

NORTHERN ADMINISTRATION BRANCH

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

CAT 1A41-68961

GREAT SLAVE LAKE – SOUTH SHORE

an area economic survey

1967

AESR 67/3

D. RADOJICIC

edited by: G. ANDERS

The views expressed herein are those of the author and not necessarily those of the Department of Indian Affairs and Northern Development.

Industrial Division
Department of Indian Affairs
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Ottawa, July 1968

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PREFACE

This report is one of a series of Area Economic Surveys carried out by the Industrial Division of the Department of Indian Affairs and Northern Development.

These surveys are a continuing part of the Department's efforts to determine the basis for local economic and social progress in the Northwest Territories. Basically the surveys are intended to:

- 1) Assess the renewable resources as to their ability to sustain the local population.
- 2) Determine the degree of exploitation of these resources and the efficiency of their use.
- 3) Investigate and explain the social and economic factors affecting resource utilization.
- 4) Recommend ways and means whereby the standard of living of the local people might be improved.

As the reasons for these surveys are practical, the material presented in the reports is selected for its relevance in this respect; much academic material gathered in the course of the investigation which may have been taken into account in the deliberations is necessarily excluded from these reports. On the other hand, authors have been given wide latitude in their approach and have been encouraged to give consideration to key problems of a theoretical nature and to include such theoretical argument where its inclusion is thought to contribute to the understanding of the material presented and of the practical conclusions drawn.

The reports are published primarily for use within the Department, for distribution to other interested government agencies and for limited distribution to libraries, universities and organizations and individuals actively engaged in northern research, administration or development.

The following reports in this series have been published to date or are in preparation:

A.E.S.R. #	Title	Author
58/1	Ungava Bay	J. Evans
60/1	The Squatters of Whitehorse	J. Lotz
62/1	Southampton Island	D. Brack
62/2	Tuktoyaktuk-Cape Parry	G. Abrahamson
62/2	Western Ungava	R. Currie
63/1	The Copper Eskimos	G. Abrahamson
63/2	Keewatin Mainland	D. Brack and D. McIntosh
63/3	Yukon Territory Littoral	R. Currie
65/1	Banks Island	P. Usher
65/2	Northern Foxe Basin	G. Anders
66/1	The Mackenzie Delta	D. Bissett
66/2	Rae-Lac La Martre	G. Anders
66/3	Frobisher Bay	S. MacBain (Miss)
66/4	East Coast-Baffin Island	G. Anders, Ed.
67/1	Lancaster Sound	D. Bissett
67/2	South Coast - Baffin Island	G. Higgins
67/3	South Shore-Great Slave Lake	D. Radojicic
67/4	Central Mackenzie	D. Villiers (Miss)



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ACKNOWLEDGEMENTS

The co-operation and assistance of the representatives of all the agencies and organizations in the area as well as of all government staff who devoted so much time and effort answering questions and discussing local problems during the field work is sincerely appreciated. Special thanks are due to Mr. J.W. Evans, Chief of the Industrial Division of the Department of Indian Affairs and Northern Development in Ottawa, for his patience and understanding and to Mr. A.J. Moon of York University for his competent help as a field assistant as well as all the local informants and guides too numerous to mention individually.

Introduction

Boundaries of Survey

The survey area is limited in the south by the Alberta- Northwest Territories border. In the North the boundary goes diagonally from Southwest to Northeast approximately in the middle of Great Slave Lake. In the east it runs from the eastern extremity of the Lake to where the Alberta, Saskatchewan and Northwest Territories boundaries meet. The Western limit of the survey commences at Point Desmerais (origin of the Mackenzie River) and goes diagonally to 117°W . The boundaries of the survey area are arbitrary and do not comprise a single geographical or economic unit. The neighbouring territories have already been or are being subjected to similar area economic surveys and that was the main reason for setting the boundaries as they are. The total territory of the area is about 18,000 squares miles. Comparing the area with the Ontario “Golden Triangle” and paraphrasing the words of a Canadian Prime Minister we may say that ‘there is not much economy, but there is lots of geography’.

The sixtieth parallel in Canada is the border between the Provinces and the Territories. It is of interest to follow the sixtieth parallel around the world. The 60°N makes the southern shore of Alaska, passes just next to Kap Farvel (the southernmost tip of Greenland), south of Iceland, north of Great Britain, and almost touches 3 North European capitals: Oslo, Stockholm, Helsinki as well as the second largest city in the USSR – Leningrad. Due to the climatic conditions and the history of the four glaciations, the sixtieth parallel in Canada appears to be located further to the North than in other parts of the world.

Developing the Northern part of Alberta would certainly influence beneficially the development of the survey area. The boundary between the Northwest Territories and Alberta however, creates some minor legal and practical difficulties in Fort Smith and Salt River.



BOUNDARIES OF THE SURVEY
AREA

GREAT SLAVE LAKE

Yellowknife

Thompson Landing

Fort Reliance

Snowbird

Rucker River

Rat River

Fort Resolution

Deer Landing

Hay River

Buffalo River

Pine Point

Buffalo River Junction

Estreprise

Sitka River

Cuthbertson Landing

Fort Smith

Fort Fitzgerald

Northwest Territories

Alberta

Saskatchewan

Physiography and Geology:

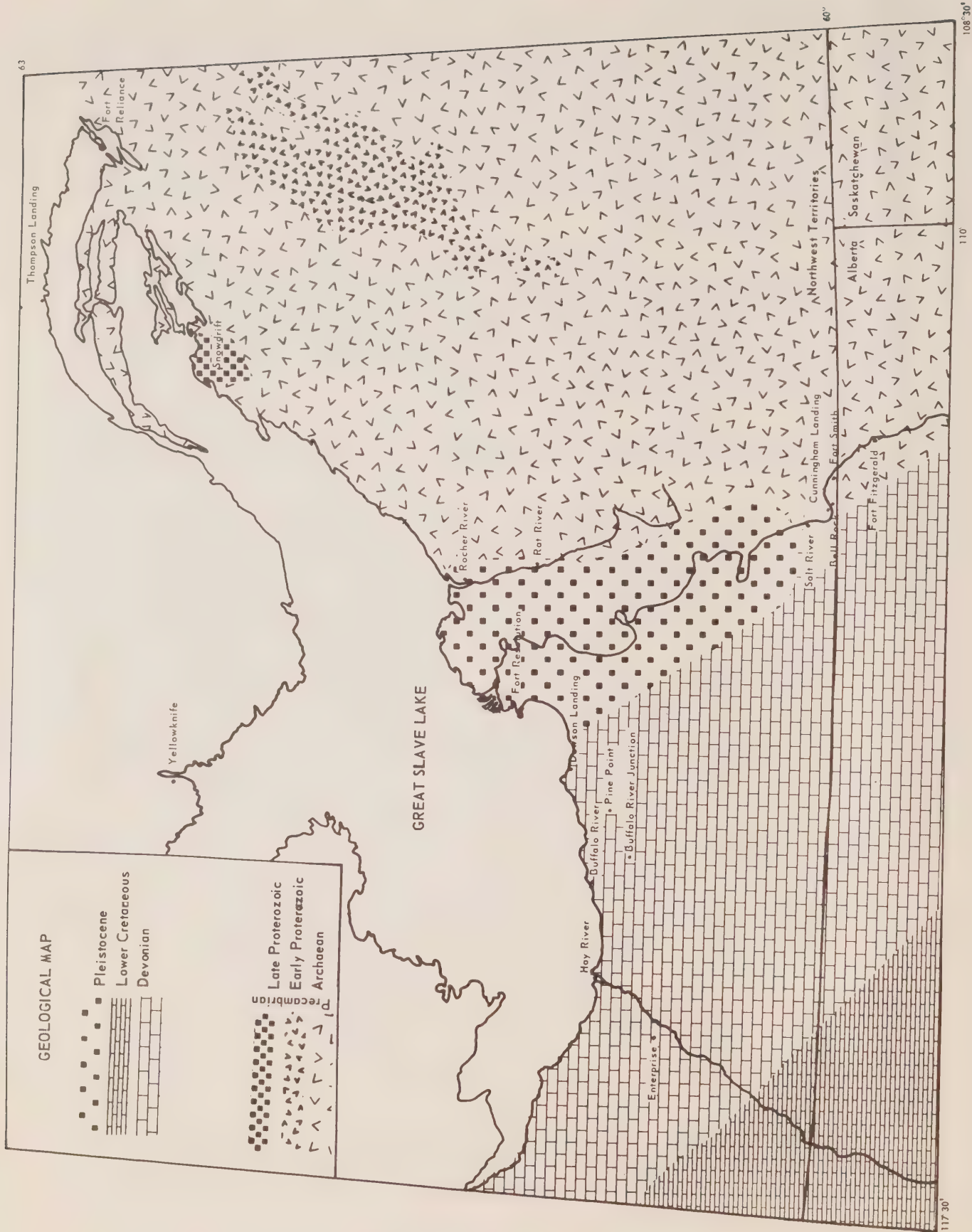
Geologically, the area has two major distinctive parts: The Canadian Shield in the east, commonly referred to as the "Precambrian", and the Paleozoic Plains in the west, with a relatively narrow dividing strip of alluvial sediments. Expectations concerning mineral resources are at their highest at the suture of the two parts. On it lies Pine Point which is geologically located in the Devonian limestone. Only two Precambrian eras, called the Early Precambrian or Archaean and the late Precambrian or Proterozoic are usually recognized and both are present in the survey area, fractures being their most apparent characteristic. The McDonald Fault, which stretches throughout the length of the southern shore of the Lake, outcrops in the eastern half of the area, and then at the conjunction with the Paleozoic Plains, dips to 20 feet or more underneath the surface.

The survey area is in the Churchill structural Province of the Hudsonian orogeny, which occurred about 1,750,000,000 years ago. Basal Archean rocks, related to the Hudsonian orogeny are plainly visible in the uplands surrounding the East Arm. A Proterozoic inlier is well displayed in the basin of the East Arm. Here a sequence of Lower Proterozoic rocks are plainly exposed: folds, scarps, and bedding planes are all readily observed. The McDonald Fault, one of the best examples of this type of structure in the Shield, is plainly visible. Denuded rocklands resulting from ice erosion during the Wisconsin glaciation are typical of the conditions over much of the Shield within the survey area.

The following geological sub-divisions are recognized in the East Arm Area of Great Slave Lake. They provide an excellent sample of the characteristic structural and geological conditions of the Canadian Shield:

		Formation	Description
Proterozoic	Et-Then Group		
		Preble	Coarse feldspathic rocks, massive, buff coloured, crossbedding and ripple marks.
		Murky	Conglomerate, irregular lenses of sandstone.
	Great Slave Group		
	Upper Part	Pearson	70' to 150' andesite, basalt trachyte and minor interbedded argillite.
		Tochatwi	300' shaly sediments and massive sandstone.
		Stark	1000' dolomite, red shale with interbedded limestone.
	Lower Part	Pethei	1500' dolomitic limestone
		Kahochella	1000' shaly laminated limestone, jasper, pyroclastic rocks.
Sosan		3000' sandstone, arkose, quartzite, conglomerate.	
Archaic			

A notable characteristic of the continental hydrographic pattern and of the boundary between the Canadian Shield and the Paleozoic Plains is the presence of large lakes that lie partly in rock basins in the Shield and partly in depressions in the younger strata. The most prominent are Great Bear Lake, Great



Slave Lake, Lake Athabasca, Lake Winnipeg and the Great Lakes. Great Slave Lake is 10,980 square miles in surface area and is one of the world's largest. In the Western Hemisphere only lakes Superior, Huron, Michigan and Great Bear Lake are larger. The western part is usually shallow having in places only about 5 feet of depth. The East Arm is deep with a maximum depth of 2015 feet.

The hydrographic pattern of the eastern part provides a good example of the youthful disorganized drainage that characterizes the landscape of the Shield. Pilot Lake, almost circular in shape, is an exception, being unusual for the Shield where the lakes have highly irregular patterns. The entire area drains to Great Slave Lake and hence to the Mackenzie River and to the Arctic.

CLIMATE

There are four meteorological stations in the area:

	Location of Stations				
	Latitude North ° '		Longitude West ° '		Altitude feet Anemovane above ground
Fort Reliance	62	43	109	06	539
Fort Resolution	61	10	113	41	549
Fort Smith	60	01	111	58	665
Hay River	60	51	115	46	529
					32 feet

The Fort Smith meteorological station is located on the south side of the Slave River at the top of a 200' river bank at the airport. The surrounding country is hilly, but there are no high hills in the immediate vicinity. At Fort Resolution the observation site has been relocated, but the data are considered homogeneous for the period of record. (Appendix I)

Temperature Extremes						
	Years of record	Highest recorded Temperature		Lowest recorded Temperature		Difference
		Degree	Date	Degree	Date	
Fort Reliance	12	+87°F	July 27, 1950	-59°F	Jan. 30, 1953	146°F
Fort Resolution	37	+92°F	July 24, 1950	-63°F	Jan. 21, 1922	155°F
Fort Smith	47	+103°F	July 18, 1941	-71°F	Dec. 26, 1917	174°F
Hay River	64	+96°F	July 8, 1906	-62°F	Jan. 23, 1906	158°F

At Snag, Yukon Territory, Canada's record low of -81° is only 10 degrees lower than at Fort Smith, but the difference between the highest and lowest at Snag is 170°F compared to 174°F at Fort Smith. On the other hand the highest recorded Canadian temperature at +113°F is only ten degrees higher than the one at Fort Smith. So, both Canadian extremes are ten degrees either way from the Fort Smith extremes. Not only the extreme temperatures have a very wide range; the diurnal range in Fort Smith can also be up to 70°F, from -40°F to +30°F. The difference between low and high records in Fort Smith, both annual and diurnal is one of the world's largest.

The climate of the East Arm of Great Slave Lake is a representative sample of the Boreal Interior Region. Summer days are often warm and bright with temperatures in the upper 60°F range. In the evenings they frequently drop to 45°F. This region receives 10" to 15" of precipitation with a marked tendency towards a summer maximum. Throughout a large part of the area there is an annual moisture deficiency* in the order of 2". Great Slave Lake itself has a 4" deficiency.

*If at any season of the year the evaporating power of the atmosphere exceeds the moisture supply, the area is moisture deficient.

Monthly and annual NORMALS of mean daily temperatures (°F)

Based on the period 1931-1960

	January	February	March	April	May	June	July	August	September	October	November	December	Year
Fort Smith	-13.8	-8.0	6.1	27.0	45.6	55.3	61.1	57.5	46.2	32.3	11.0	-6.3	26.2
Hay River	-12.2	-7.8	3.8	23.6	40.8	51.6	59.8	57.7	46.8	33.1	11.2	-6.2	25.2

Monthly and annual AVERAGES of mean daily temperatures (°F)

	January	February	March	April	May	June	July	August	September	October	November	December	Year	Years of record
Fort Reliance	-21.4	-17.6	-4.5	14.3	33.8	46.6	55.2	55.3	43.7	27.0	7.0	-11.6	19.0	12
Fort Resolution	-14.9	-10.4	1.9	22.0	42.0	52.9	60.2	57.5	45.7	31.6	12.4	-7.1	24.5	22

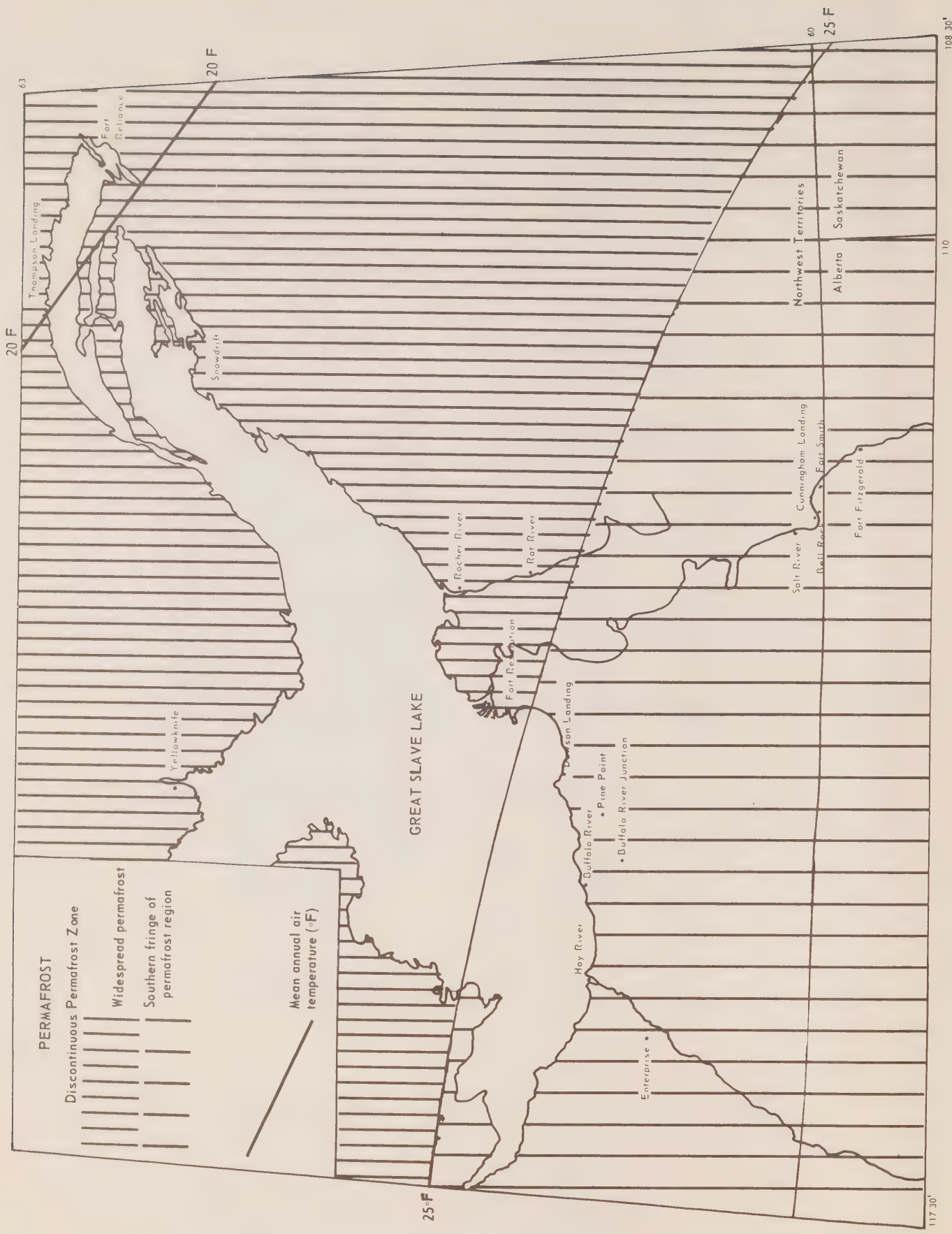
In keeping with international recommendations that 30 years of continuous records are necessary to give a reliable mean value for temperature, the averages are classed as NORMALS at stations where uninterrupted records of observation extends over the full 30 year period 1931-60. The temperature values are classed as AVERAGES at those stations where the period of record is more than 10, but less than 30 years. Both Hay River and Fort Smith have more than 38 years of record, Fort Reliance has 12, and Fort Resolution 22.

Annual percentage frequency of winds (Ft. Smith)

	north	northeast	east	southeast	south	southeast	west	northwest	calm	
	14	8	9	21	14	8	8	16	2	100%
Percentage frequency of winds by directions (Ft. Smith)										
	January	February	March	April	May	June	July	August	September	October
North	4	14	18	22	19	17	15	19	11	9
Northeast	1	4	5	6	19	17	11	7	10	6
East	7	10	12	14	10	12	8	6	8	8
Southeast	30	19	30	25	24	19	13	12	19	21
South	15	10	9	12	11	12	14	20	13	17
Southwest	7	6	3	3	4	7	13	11	12	13
West	9	10	5	4	3	4	7	9	9	10
Northwest	21	22	16	13	10	11	18	15	17	15
calm	6	5	2	1	*	1	1	1	1	1
	100%									100%

Average wind speed in miles per hour (by direction) (Ft. Smith)

	January	February	March	April	May	June	July	August	September	October	November	December
North	3.1	4.9	6.6	7.6	7.9	6.5	6.3	6.1	6.4	6.4	5.5	5.0
Northeast	2.0	4.0	5.7	5.7	8.1	7.4	7.5	5.1	7.8	6.6	6.7	5.9
East	3.7	4.2	4.3	6.0	6.7	7.2	5.7	4.9	5.5	6.0	4.8	4.4
Southeast	6.3	6.8	8.2	7.9	8.1	6.9	6.9	7.7	7.6	8.2	7.9	6.4
South	4.4	5.5	5.8	6.9	7.9	6.2	6.7	6.5	6.1	6.5	5.8	4.8
Southwest	5.7	5.4	6.1	6.2	7.5	6.2	6.9	6.9	7.4	7.0	5.4	4.4
West	6.8	4.2	5.7	6.2	6.8	5.8	6.3	6.7	6.9	6.7	6.1	5.3
Northwest	6.4	6.8	8.4	7.5	8.5	7.6	8.1	8.4	7.9	8.6	7.6	6.6
Average wind speed in miles per hour (Ft. Smith)												
	5.3	5.3	6.8	6.9	7.8	7.0	6.9	6.7	7.0	7.1	6.3	5.2



For the economy, three important climatic features are:

- 1) the degree-day
 - 2) the freeze-up and break-up periods
 - 3) windchill.
- 1) A degree-day is a unit based upon temperature difference and time, used mainly in estimating fuel consumption and specifying the nominal heating load of a building in winter. On any day when the mean temperature is less than 65°F there are as many degree-days as there are Fahrenheit degrees difference between actual mean temperature and 65°F. In Canada the increase in the number of degree-days from south to north is quite marked. In Canada annual degree-days vary between 5,500 and 24,000. In the survey area annual degree-days vary between 13,000 and 17,000.
 - 2) Freeze-up and break-up periods determine summer and winter seasons on the lake. Planning of many economic activities in the survey area revolve around these break-up and freeze-up periods.
 - 3) Windchill indicates the cooling power of the atmosphere off the surface of human skin at 91°F, and the number of calories that would be lost from the body during one hour. 1,400 units is the point at which exposed flesh freezes. Mean annual windchill factor in parts of the area is 900, while in Ottawa it is 1,200. The computed maximum gust speed* is either lower or the same as it is in Ottawa. In the area it is 80-100; in Ottawa 90-100.

DEMOGRAPHY

The population of this area presents a diversified ethnic mosaic, representing all major races of mankind. The total population of the Northwest Territories is approximately 30,000 people. An enumeration of the people in part of the survey area was done by the Dominion Bureau of Statistics in a pilot study in the summer of 1967. 4,103 persons were enumerated west of Rocher River. Adding 1,000 people living in the area east of Rocher River plus those that were not enumerated, we obtain a total of over 5,000 (in approximately 1,600 families) corresponding to 1/6 of the Territorial population.

The gravity center of the population of the Northwest Territories definitely falls within the area, at present somewhere between Hay River and Pine Point. The ratio of whites to nonwhites is progressively changing. With immigration Whites will constitute a majority soon, and in certain enclaves (Pine Point) they do so already.

There are 16 Indian bands in the Northwest Territories; four of them in the area:

Band	Population	Linguistic group	Language or dialect
11 Fitz/Smith	282	Athabaskan	Chipewyan
13 Hay River	222	"	Slave
14 Resolution	282	"	Chipewyan
16 Snowdrift	224	"	"
TOTAL	1010		

* Computed Maximum Gust Speed is:

$$V_g(\text{max.}) = 25 + 1.22 V_m \quad \text{where}$$

V_m = speed in miles per hour averaged over an hour from the cup anemometer

$V_g(\text{max.})$ = computed maximum gust speed

The numbers are based on the Indian Registry Records and include adoptions in 1967. Except for the Fitz/Smith band, of which the majority live in the survey area, the other three bands live entirely within the area.

The two main groupings in the survey area are then: Chipewyan in the East, and Slave Indians or Slavey in the West. Chipewyan is a Cree word and means 'pointed skins'. The name came from the shape of the deerskin shirt, which sometimes had a queue appended to it in the back. The Slave Indians got their name because of their comparatively peaceable nature.

The main question that arises is whether the area is capable of supporting a larger population than at present? The answer to this question depends entirely upon the speed of further economic development in the area. The present situation and future projections give reason to believe that the population will increase.

Population Distribution					
	Fort Smith	Fort Resolution	Rocher River	Hay River	Total
-16	323	192	7	409	931
Male 16-65	618	161	12	724	1,515
65 +	81	18	2	96	197
-16	340	146	6	390	882
Female 16-65	592	133	5	378	1,108
65 +	87	29	2	378	225
Total	2,041	679	34	2,104	
					GRAND TOTAL 4,858

The population is fluid and the figures change correspondingly. Apart from the seasonal fluctuations, the overall tendency is toward a numerical increase.

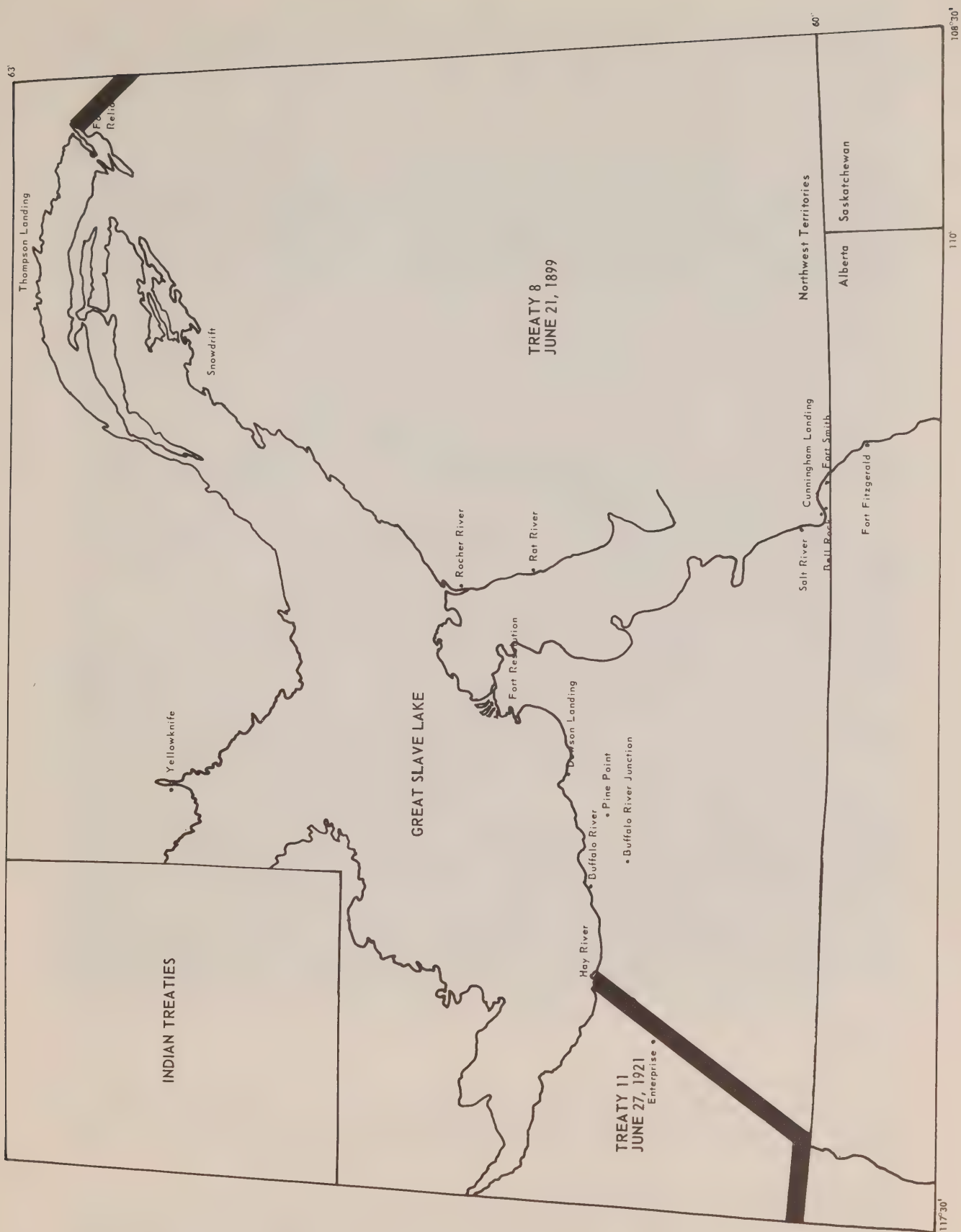
INDIAN TREATIES Two Indian Treaties extend to the Northwest Territories, and both of them cover the survey area (map 5). Treaty No. 8 was made on June 21, 1899 and includes Territory east of Hay River, while Treaty No. 11 was concluded on June 27, 1921 and covers the rest of the area. Treaty No. 11 was the last Treaty to be signed. These two treaties are similar to the preceeding ones and include provisions for reserves that never were established. In 1959 a Royal Commission was appointed to investigate the unfulfilled provision of Treaties 8 and 11 as they apply to the Indians of the Mackenzie District.

Under the treaties a reserve would be set aside not to exceed in all one square mile for each family of five or an equivalent proportion for larger or smaller families. The Commission visited 15 settlements, 4 in the survey area: Hay River, Fort Resolution, Snowdrift, Fort Smith. The Fort Smith, Fort Resolution and Hay River bands would number altogether 998 Indians based on the 1954 Census and the approximate land credit would be 127,544 acres as the following table shows:

Band	Number of Indians in Band ('54 census)	Approximate land credit
Fort Smith	186	23,608 acres
Fort Resolution	650	83,200 acres
Hay River	162	20,736 acres
TOTAL	998	127,544 acres

The Commission explained that the taking up of the land credits did not necessarily mean that a band would have to live on the land it obtains by the Treaty and furthermore, that it would in no way restrict its movements nor curtail its fishing, hunting and trapping rights.

The Commission recommended that reserves as provided for in Treaties 8 and 11 be NOT set aside for the Indian bands of the Mackenzie District. The Commission felt that reserves belong to a past era in



Canadian history, and the creation of reserves would be a backward step and would delay integration. Instead the Commission recommended a cash settlement. This recommendation has not been implemented. The Commission also recommended "that any Government contract which may be let to private industry in the Mackenzie District include a clause requiring the contractor to employ Indians whenever possible." On the other hand, a 'Fair Practice Ordinance' states that any Canadian can work anywhere in Canada. However, employers can be encouraged to hire local help, and also to make jobs more attractive to the local labour pool.

The Indian Act as it is presently worded can only be applied to bands that have reserves. It has been suggested, however, that Section 73 (4) be amended so that bands not living on reserves, such as those in the Yukon and Northwest Territories or on Crown lands, will be able to adopt the elective system if they wish. The Snowdrift band continues to elect its chief and councillors according to the traditional system of electing and holding office.

EDUCATION

Only four high school complexes exist in the Northwest Territories which offer a complete high school education including grade 12. Two of those four are in the area, at Fort Smith and at Hay River.

The schools and hostels in the area contain the most modern conveniences available. The ultra-modern Princess Alexandra School in Hay River was finished and officially opened in June 1967, and commenced operations, at the beginning of the school year, in September 1967.

In the five settlements of the survey area (Fort Resolution, Fort Smith, Hay River, Pine Point, Snowdrift) there are seven schools (Hay River has an elementary school, a high school and a separate school). As of September 30, 1967, there were 89 teachers and 91 classrooms with a capacity of 1,825, while the actual enrolment was 1,749. The present facilities could accommodate an additional 76 students, or the equivalent of three full classes. The student-teacher ratio is a favourable 20:1. With a normal student-teacher ratio of 25:1 the present teachers could teach 2,225 students or an additional 476 students. Out of the total of 1,749 students there are 14 Eskimos, 383 Indians and 1,352 "Others".

In Fort Smith there are two separate buildings, the "Old school" and the "New school". The new school, named after the Canadian geologist and encyclopedist Joseph Burr Tyrrell, has 41 rooms. This makes it, after the one in Inuvik, the biggest in the Northwest Territories. There is one principal for both schools. In the old school there are only one or two classes depending on the number of enrolled students and the availability of space in the new school.

The Fort Smith school is unique in the Northwest Territories in that it is the only school where French is taught in the elementary grades beginning with grade two.

The school library at Fort Smith is good, has more volumes than the community library and is open every school day, but only to those associated with the high school. Integration of the two would be desirable.

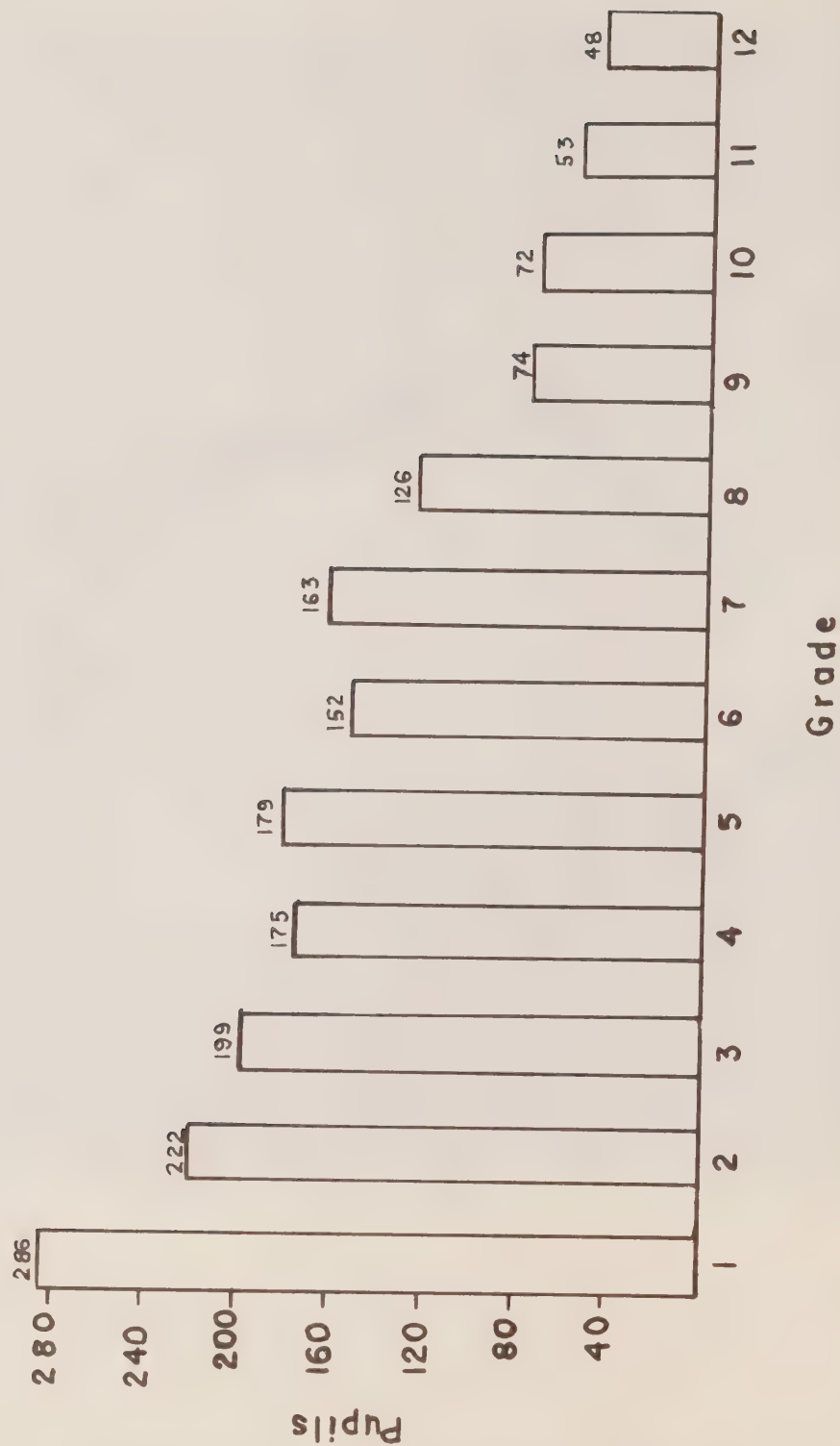
The Fort Smith school draws students from all over the area. An annual migration of students to Fort Smith continued even after the school building in Snowdrift was completed. There are several reasons for this: the convenience of a hostel frees parents for trapping and reduces expenses to the parents; and teaching staff and physical facilities of the Fort Smith school are considered superior.

GRANDIN COLLEGE: At present Grandin College takes only high school students. It operates in conjunction with the regular school, and serves as a dormitory for students. It is operated by the Catholic Vicarate of the Mackenzie, but is assisted financially by the Federal Government, since entrance is not



Federal Day School – Snowdrift

Distribution of Pupils by Grades September 1967



restricted to any particular denomination. Assistance at the rate of \$60.00 per month for all Indian and Eskimo students normally considered eligible for admission to a pupil residence is provided by the Federal Government. Grandin College opened in the Fall of 1964. In 1964, beside the Northwest Territories students, there were seven boys from Northern Alberta and one from Saskatchewan. As part of the College, Breynat Hall is available as a living and study area. It was named after Archbishop Breynat who worked in the Mackenzie for thirty years. It has a capacity of 200 pupils. At the end of September 1967 there were at Grandin College:

Indians	167
Others	27
Total	196

The ratio of dormitory supervisors to resident pupils is 1:25. That is also the ratio of students per classroom and of students per teacher. Three hours study or tutoring is required every day including Saturdays and Sundays. Tutoring is done by qualified tutors, all of whom are college graduates. The failure rate of the residence students is less than the Canadian average.

In the Northwest Territories there are four categories of students according to their eligibility for admission to hostel residences and two lines of financial responsibility. They are:

- A — Federal responsibility — Indian or Eskimo students who would normally be eligible for Hostel admission.
- B — Territorial responsibility — those students other than Indian or Eskimo who would normally be eligible for Hostel admission.
- C — Those students who are not eligible for Hostel admission as school facilities are available to them in their home settlement.
- D — Those students from outside the Northwest Territories.

SOME FACTORS AFFECTING EDUCATION ADVERSELY Some parents are faced with the dilemma whether to send their children away to the larger educational centres or to keep the children with them. Neither alternative is completely satisfactory. In the first case the family is fractured through the educational process with a resulting estrangement of the parents from their children. In the latter case the children are absent from school, because they go with their parents to the trap line. Failure rate is increased due to this kind of absenteeism. There were several suggestions to overcome this problem. One of them is to have the school run in the summer and have the annual holiday in the winter. The closing of the school would coincide with the beginning of the peak trapping activity. This time table would solve one problem, but would probably create others. A deterrent to high absenteeism is the making of continuous attendance in school a condition for family allowance payments. This condition reduces the incentive for trapping and is neither enforced nor enforceable.

Instruction in the English language begins in the initial grades. In order to facilitate the transition from the vernacular to English the position of the "teacher assistant" was instituted. During the 1966-67 school year eight teacher assistants were working in the Mackenzie, one of them in Snowdrift. A Teacher Assistant must be fluent in English and in the local language; in the case of Snowdrift this is Chipewyan. Minimum schooling requirement is grade six. Teacher assistants spend half a day in school and are paid \$100 a month for half a day. The base salary is for the minimum qualification requirement — grade six — and then for each higher grade an additional amount is applied at \$10 a grade, with a maximum of \$60 for grade 12. This is an incentive for further education and would facilitate the Teacher Assistant's transfer into some other job that requires further schooling.

SOME FINANCIAL ASPECTS OF EDUCATION The first year in which a government grant to a school north of the 60th parallel was recorded was 1894, when the school at Fort Resolution under the auspices of

the Church of England received a special grant of \$200 from the Department of Indian Affairs' school appropriation fund, 31 pupils being enrolled. Today the expenditure is expressed in millions. The average cost per student now is more than three times the total amount given to education in the first year of the grant.

The average annual cost per pupil for all federal residential schools in the North in 1965 was \$682. For Breynat Hall in Fort Smith it was \$757 in 1965, and \$751.77 in 1966.

An important item of expenditure on education in the survey area is the transportation of students from their homes to school. As the following table shows the difference in average transportation cost per student is great, due to differences in distances.

Settlement	No. of Students	Contract Cost	Average per student
Fort Smith	259	\$16.000	\$ 61.00
Enterprise to Hay River	12	\$ 3,500	\$291.00
Hay River	130	\$ 9,580	\$ 73.00

30.5c per day per student is the cost for the school bus in Fort Smith, which is born by the federal government.

VOCATIONAL EDUCATION Most educators in Fort Smith feel that a person is too young to engage in a trade after attending vocational school still in their teens. It is felt that after completion of grade 12, vocational training would benefit a person significantly more. The Department is supporting financially those that take vocational training, in Yellowknife and in the provinces, regardless of age.

Only eleven students were enrolled in occupational classes but they dropped out after three months. Of these students three were boys and eight girls.

There is interest in correspondence and adult education courses in Fort Resolution and Hay River. In Fort Resolution one male aged 60 enrolled in a winter course in Social Studies (history and geography) and one female over 61 years took the same course by correspondence. Eleven men were given on-the-job training in mechanics and heavy duty equipment operation at the co-operatively owned sawmill at Fort Resolution.

In Hay River the enrollment in winter in informal education was as follows:

Social Education:

Conversational French	12
Mathematics — new approach	10
Total	22

Fine Arts and other Cultural Activities:

Dressmaking	10
Woodworking	6
Total	16
Grand Total	38

The average number of persons in a course was nine, and out of the grand total of 38, twelve were male and 26 female. The courses appealed to the advanced age groups: In the age group of 21 to 40 there were fifteen students, in the 41-60 group there were 21 students and two persons were over sixty. Of all the persons enrolled eight had only elementary school and thirty were high-school graduates. The occupational distribution was as follows: housewives 19, clerical and office workers 12, technical and industrial workers 2, professionals 3 and others 2.

The importance of adult occupational training is being recognized and is gaining momentum. Bell Rock is probably going to be vacated by late 1968 and might be converted into an adult occupational

training centre where whole families could live together, while the father is in attendance. Education, training, and wage employment would go hand in hand.

POST-SECONDARY SCHOOL EDUCATION Prospective university students from the North can come only from those schools that have grade twelve. The Hay River and Fort Smith schools are and will in the future be the main sources for such students. The government generously assists those who want to go to university. Outright grants to all students who qualify for university entrance are made to cover the cost of education (tuition fees, books etc.) and cost of transportation from the student's home to and from the university centre each year. Loans are made available as required to cover the cost of board and lodging for the student while he is attending university, such loans to be free of interest until graduation or the date on which the student leaves university. Thereafter the unpaid balance of loans is subject to interest at the rate of 4%, per annum during the first three years and 6% per annum for all subsequent years. In order to encourage the return of students for employment in the Territories, loans are written off if a period of two years' service in the North (after graduation) is completed.

Besides these grants and a number of private donations, there are also two Northwest Territories Government scholarships in the amount of \$800.00 each. One of these two was awarded to a student from Fort Smith, who attended the University of Manitoba in the Faculty of Arts in 1966-67.

NORTHERN UNIVERSITY. There were several proposals for establishing a university at Fort Smith. It is locally considered the ideal location in the sub-arctic, being easily accessible from the south as well as being open to communications with the Arctic. As Fort Smith is becoming a town of institutions the idea has some merit. At present the following Canadian institutions are interested in the North, which by joining their efforts could lay the foundations for a northern university:

Arctic Institute of North America – Montreal

Boreal Institute – Edmonton

Committee on Northern Studies – Winnipeg;

The Institute of Northern Studies – Saskatoon, and its subsidiary The Arctic Research and Training Centre, at Rankin Inlet;

Centre d'Etudes Nordique, Université Laval, with its subsidiary at Fort Chimo;

Inuvik Research Laboratory;

McGill University – Montreal (Committee on Northern Research)

Northern Science Research – Ottawa.

Committee on Arctic and Alpine Research (University of British Columbia)

Northern Area Studies President's Committee (Lakehead University)

Committee on Arctic and Subarctic Research (University of Toronto)

Groupe de Recherche Nordiques (Université de Montréal)

HEALTH

It is frequently mentioned that whites brought with them two abbreviations: TB and VD. If that is true it is equally true that whites brought with them hospitals to cure not only these but many other ills. In the area there are two operating hospitals with a total capacity of 140. Fort Smith hospital has not been used to capacity yet, and any person requiring hospitalization does not have to go through a waiting period. Beside the hospitals there are also clinics with resident doctors at Fort Smith and Hay River. In addition there is a medical doctor in private practise in Hay River. Besides the general practitioners there is also an ophthalmologist serving the district stationed in Fort Smith.

Both hospitals are run by religious orders, the one in Fort Smith by a Roman Catholic, and one in Hay River run by a Pentecostal mission. Both management and staff of the hospitals are people dedicated to the cause of their mission, so much so, that the medical staff at the H.H. Williams Memorial Hospital in Hay River is relinquishing part of its income for furthering medical advances and treatment in the Canadian North.

Fort Resolution used to have a nursing station operated by the Catholic Church, but because the station was unsuitable for non-ambulant patients the fire marshal ordered that it be closed. Instead, there is a Health Centre visited by staff of the local hospitals.

In Pine Point there is a nursing station. A doctor comes in once a week from the hospital at Hay River, but all doctors in Hay River are visited by the people from Pine Point. This is found to be quite satisfactory; so much so that at the present time there is no intention of building a hospital in Pine Point. About 50 per cent of the women now have their babies in the Hay River Hospital instead of going outside.

In Edmonton the Charles Camsell Hospital takes care of the TB patients from the survey area. Every patient from the area is quickly transferred to this hospital and his stay is prolonged as long as is required for successful medical treatment.

The general health picture in the area is probably not much different from the Canadian standard. The quality of the teeth of the Indians, however, is surprisingly poor.

In the Northwest Territories there is a special fuel oil tax, the proceeds of which help to finance the Territorial Hospital Insurance Services Plan. At present this tax amounts to about \$4. — per household per year.

St. Anne's General Hospital in Fort Smith

	1963	1964	1965	1966
Total patient days	15,657 days	13,991 days	8,202 days	9,609 days
Cost per patient day	\$15.01	\$17.67	\$23.10	\$24.03

Total patient days in the Hay River Hospital in 1967 was 3,489. Net cost per patient meal-day in 1966 was only 92¢, while the quality and quantity of food was quite good.

It is estimated that the total plant assets of the hospital in Fort Smith, including buildings and major and minor equipment are worth approximately \$700,000.00. The one in Hay River is valued at \$580,000.00.

Hay River hospital employs a staff of 28 on a full time basis and 12 part-time helpers. The number of employees in Fort Smith's hospital varies, but it is approximately the same as in Hay River.

RELIGION

As is the case with the schools, the architecture and the facilities of the churches in the area are well advanced. The Catholic church in Hay River has a compartment with a glass wall and acoustic isolation for young children with mothers.

In the area there are twelve churches of the seven different religious denominations, all Christian. In Fort Smith there are two Catholic churches. The denominations represented in the area are:

Catholic (five churches in 4 settlements)
 Anglican (2)
 Pentecostal
 Baptist
 United
 Jehovah's Witnesses
 Nazarene

The Baha'i movement has followers in the survey area, but no temple yet. The indigenous religious beliefs are assimilated by or fused with the Christian.

Churches in the Area

Hay River:	Catholic, Anglican, Pentecostal, United, Jehovah's Witnesses
Fort Smith:	Catholic, (2), Anglican, Nazarene, Baptist
Fort Resolution:	Catholic
Snowdrift:	Catholic

There are no collections in the churches, therefore all the capital as well as operational and maintenance costs come from the south, injecting additional funds into the local economy. Hiring of local labour for maintenance work and the work connected with the physical facilities, contributes to the wage income.

HOUSING

Housing is of even greater importance in the North than it is in the South, because of the great amount of time spent indoors. Lack of housing can seriously retard the economic development of the North. While some settlements (notably Hay River) are short of houses, Fort Smith has if not an outright surplus, then certainly no shortage.

The cost of building a house is higher in the area, than in the zone of continuous settlement, as can be expected. To assist the people in the area to obtain adequate housing there are presently four schemes:

- A) The Indian and Eskimo housing program;
- B) Crown housing for federal employees;
- C) The Northwest Territories Government low-cost housing mortgage program;
- D) National Housing Act (NHA) loans.

The first three schemes are available exclusively in the North, while the last one is applicable anywhere in Canada.

A) Indian Housing. In the summer of 1966, the Northern Administration Branch took over the responsibility for Indian housing in the Northwest Territories. The Indian Affairs housing program is basically one of subsidized individual ownership rather than of rental. The subsidy, up to \$7,000, is supplied in the form of building materials and supervision in erecting a house. Housing assistance is also supplied to Indians resettling from poor areas to areas of greater economic opportunity by making available grants depending on income. The house must be built up to minimum NHA standards, and the grant is given by means of a second mortgage conditional loan. The balance of the funds is provided by an NHA first mortgage loan.

B) Federal employees and teachers' accommodation is provided at reasonable rental rates which in no case may exceed 20% of an employee's salary. A monthly charge of \$5 is made for furniture.

C) Territorial Low-Cost Housing Mortgage Program.

The Territorial Government also has a special low-cost housing program to meet the needs of the Metis and low-income non-Indian and non-Eskimo families. The maximum first mortgage loan available is \$8,000 for a term of 25 years at the current NHA rate of interest. A second mortgage loan of \$1,000 repayable over ten years is also available to those people constructing a house valued at \$10,000 or less. The annual payments of \$100 due on the second mortgage may be written-off if the borrower lives in the house continually and fulfills the conditions of the mortgage. Under this scheme in the Fort Smith region there are 51 new Indian family units planned, out of 96 for the District.



The last of the combination tent dwellings, being replaced with a frame house;
note the radio aerial

D) Under this scheme loans have been approved at Pine Point for 14 rental units; at Hay River for 20 with a further 23 rental units under construction; and at Fort Smith for two with a further 20 units under construction.

In conjunction with housing the Territorial Government is responsible for the provision of water and sewage disposal services to communities below the tree line. A minimum of 10 gallons per capita per day for dwellings not provided with pressure systems and of 40 gallons per capita per day for those provided with pressure system is stipulated. There is also a quota for electricity and fuel. If enough electrical power is available, then the quota can be easily increased. Fuel oil is more restricted.

Comparison with Canadian Housing by Percentage of Total Housing

	Running Water	Indoor toilet	Electricity
Canadian housing	92%	90%	99%
Pine Point	100%	100%	100%
Fort Resolution	4%	4%	77%
Hay River	80%	42%	81%
Fort Smith	49%	47%	89%

As the table shows housing at Pine Point has complete services. The figures for the other three settlements appear somewhat low compared to the Canadian average but, in this table only privately owned houses are included. The government controlled houses in all the settlements have 100% of all the services. If they are included, the average of all the houses in the area would approximate the Canadian average and in some instances even exceed it.

At Fort Smith there are 80 unacceptable¹ houses occupied by non-Indians and non-Eskimos. All are privately owned and of the 80 families 41 have incomes of \$3,000 or less, and 39 have \$4,000 or less. It seems that at least 41 of these 80 cannot afford to build, buy or rent better housing.

In Hay River 74 of 284 housing units are substandard (25%) and an added 35 units are overcrowded.² Together these units house 41% of the population. However of these 109 units, 55 of the family heads earn in excess of \$4000 per year. Of the remainder, 20 are occupied by Indian families, leaving 34 houses occupied by non-Indians with incomes below \$4000.

LAW AND ORDER

The law enforcing authorities in the area claim that the local population is law-abiding, serious crime being virtually unknown. There is one problem, however with which they are overwhelmingly concerned and that is the problem of alcohol. The vast majority of offences are directly related to alcohol consumption.

In the Indian Act the sections dealing with intoxicants provide for various stages of development: a) total prohibition; b) consumption in public places; c) purchase and use in the same manner as other

1 Unacceptable housing is:

- a) Housing which through age or depreciation has deteriorated to the point where it is no longer economically repairable;
- b) Housing which because of the type of construction or the materials used can not be considered as reasonable accommodation.

2 Over-crowding is determined individually by appraisal. However, a house with three or more bedrooms is NOT considered overcrowded regardless of the number of dwellers of a nuclear family.

residents. In the survey area stage c) has been reached. Out of six liquor stores in the N.W.T., two are in the survey area — one in Fort Smith and one in Hay River. A Liquor outlet is operating in Pine Point and three fishing lodges are licensed. The Fort Smith and Hay River systems of dispensing liquor in lounges differ. In Fort Smith the waitresses do not handle liquor. When a patron expresses the desire for a drink a waitress calls the bartender from the lounge who serves the customer. At Hay River the situation is reversed. There is hardly any male staff in either of the two cocktail lounges. The girls, who do the serving, directly encourage the patrons to order additional drinks.

In addition to commercial liquor, people consume locally prepared drinks. There are two main varieties: "malt beer" and "home brew". Malt beer is made from the canned malt that the local stores carry. There is a Canadian and British preparation, both for the same price — \$1.75. On the British can there are complete instruction for preparation. Canadians probably consider such an instruction redundant, since everybody already knows anyhow. Home brew is made from raisins as the main ingredient. While the store manager can temporarily withdraw malt cans when in his view there is too much drinking in the town, he cannot withdraw the raisins because they are a food staple also.

When a man is intoxicated he will be prepared to pay any price for liquor. We were told that two quarts of home made brew sold for \$20. The actual cost is only a few cents per quart. Possession attitudes toward alcohol run a wide gamut. It is recognized that alcohol is the commodity most readily shared, and that even a slave of alcohol would not drink alone. On the other hand, one informant said that he would share food, or anything else with anybody, but the brew that he has made is only for himself.

Since intoxication offences far outnumber all others, there were several proposals for the remedy of the situation. One of them is for the creation of detoxication centres and alcoholic clinics as alternatives to incarceration.

The headquarters of the Northwest Territories sub-division of "G" Division of the RCMP is in Fort Smith. There is also a treatment centre for juvenile offenders which was developed and completed at Fort Smith early in 1967. It accommodates both boys and girls and can handle 16 juveniles. On February 20 the Fort Smith Treatment Centre inaugurated its service. The Territorial Correction Service has a field probation office in Hay River. In the Territories there is also a Mobile Detention Camp which in reality is not that mobile. It would cost about \$50,000 to move it. Therefore, many officers expressed an opinion preferring Fort Smith as a permanent site.

In the survey area there are no Indian Special Constables. The only one used to be stationed in Fort Reliance but he changed his job and place of residence after the closing of the Fort Reliance post.

The number of prisoners in the Fort Smith area who were incarcerated in the Guardroom for the fiscal years follows:

1964-65	-	352	1965-66	-	305	1966-67	.	526
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Actually for the calendar year 1966, the Fort Smith Detachment guardroom booked 716 prisoners. Included in this total are the number of prisoners who are termed repeaters; also some 200 who were inmates transferred to Fort Smith from other points in the Southern Mackenzie District of the Northwest Territories. With the opening of the new Yellowknife Correctional Institute during the latter part of February 1967, it is stated policy to transfer all prisoners from throughout the Mackenzie District to that institute, save for those short term prisoners sentenced up to a week or ten days who are held at the local RCMP detachment cells or where it is impractical or uneconomical to transfer them to Yellowknife.

During August 1966 there was a total of 131 persons admitted to the Correctional institution, out of which 108 or 82 % were Indian and Metis. This prompted the editor of a Hay River newspaper to charge discrimination. The Department of Justice took the alleged impropriety seriously and appointed Justice W.G. Morrow of the Territorial Court to hold inquiry on the matter. His conclusion on the evidence is that "there has not been any discrimination . . . against the Indian or Metis population, but that . . . Indians, Metis and whites or others are treated without favour or bias".

Pine Point contrasts with some other mining communities in its calm appearance and low frequency of conflicts with the law. In a twelve months period only 48 offences have been prosecuted, 27 of those being connected with liquor, and all of them of a minor nature. Traffic offences and traffic ticketing did penetrate into the North and 15 people found the familiar looking slips on their windshields.

As an illustration of the attitude toward the law from both the local population and the enforcing officers, the following example may serve:

An Indian killed a moose, while fighting a forest fire. The fire was extinguished and he returned to Snowdrift with only a small portion of the animal. There was considerable excitement and concern in the settlement about what the Game Warden's and the RCMP's attitude would be. Some advocated chartering a plane to get the moose out. While the discussion was going on, with the whole settlement participating, unusually hot weather for two or three days rendered the meat unfit for human consumption.

Gin rummy is the most popular card game. The amount of money that changes hands probably make it the cause of the biggest monetary transactions in the village. The amount of money that changes hands depends on the total amount that individuals have.

THE NATIONAL PARK

Section 4 of the National Parks Act states: "The parks are dedicated to the people of Canada for their benefit, education and enjoyment . . . and such parks shall be maintained and made use of so as to leave them unimpaired for the enjoyment of future generations."

The portion of the only national park that is partially extended into the Northwest Territories (Wood Buffalo National Park) lies entirely within the survey area. Roughly one quarter of the park is located in the area (3,625 square miles), and 13,675 square miles are in Alberta for a total of 17,300 square miles. Wood Buffalo National Park contains 59 of the area of all 19 National Parks in Canada. This park then is larger than all the other 18 together. It is not only Canada's but is the world's largest park. This park has been used entirely as a wildlife preserve since its establishment and is little developed for public use. A Superintendent is the manager of the park who is stationed in Fort Smith and supervises a staff of 25 park wardens, patrolmen and maintenance and clerical employees.

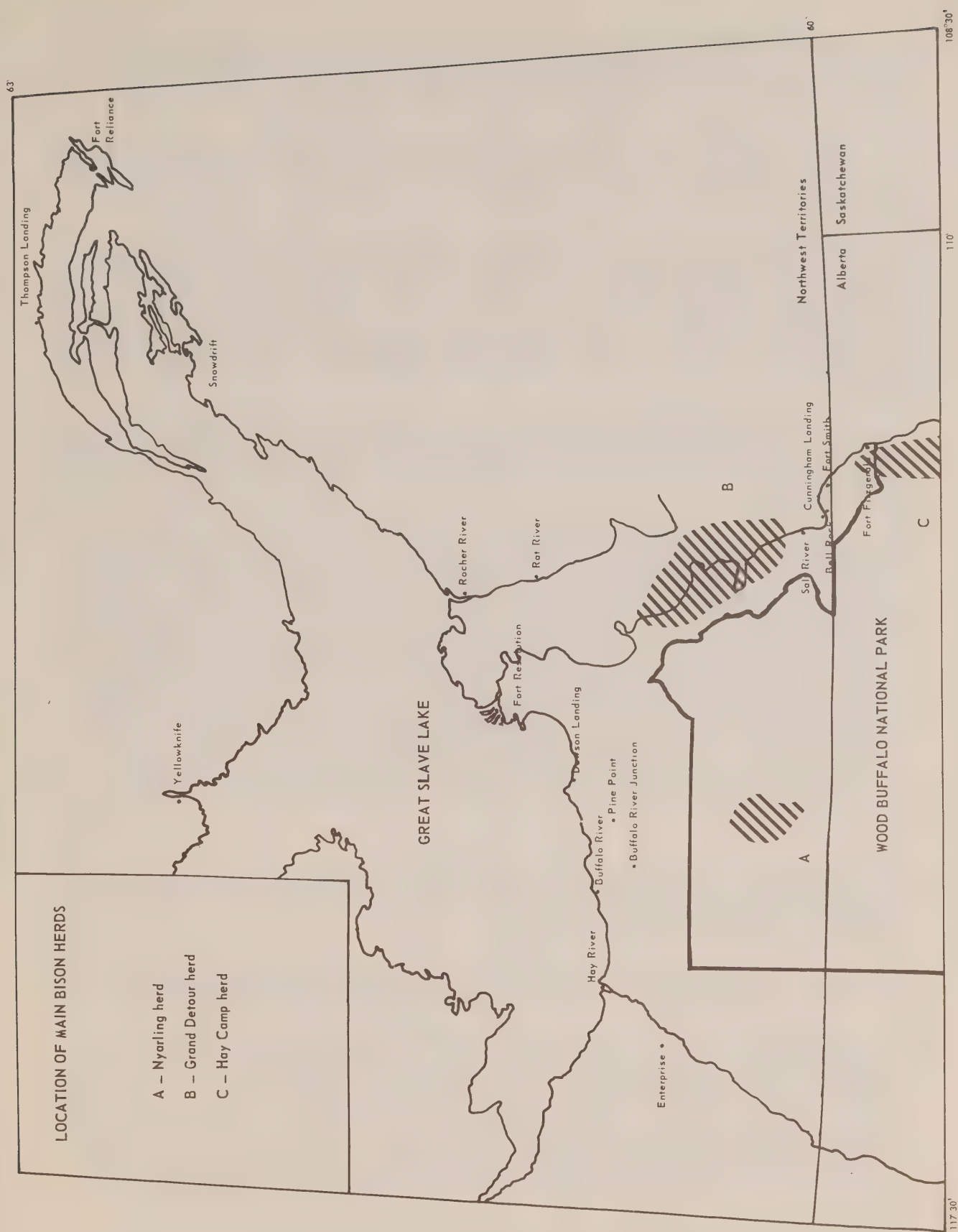
About 450 species of flora have been identified in the Park. The fauna is also abundant, both in number of species and in the number of individuals within the species. Upland game birds, such as the ruffed grouse, spruce grouse and sharp-tail, are found on the Salt Plains. Ptarmigan from farther north winter in the park. Other birds in the park are hawks, falcons, bald eagles, golden eagles, loons, grebes, white pelicans, double-crested cormorants, great blue herons, American bitterns, whistling swans, various species of ducks, geese, gulls, owls and woodpeckers, ruby-throated hummingbirds, Canada jays, Northern ravens, crows, and a wide variety of song birds.

But two species are of particular importance, and they are indeed *raison d'être* for the park. They are the Buffalo and the Whooping Crane.

Buffalo It is estimated that at the time of Columbus there were about 4,000,000 buffalo on the Continent. At the turn of the twentieth century their utter extinction was threatened. The Canadian Government recognized the implications of this and in 1922 created Wood Buffalo National Park mainly for the preservation of Buffalo. The Plains Bison (*Bison bison bison*) was moved to the area, where it crossed by natural process with the indigenous Wood Bison (*Bison bison athabasca*). Today there is a fairly constant population of about 12,000 hybrids and a herd of only about 5 pure wood bison in Wood Buffalo National Park. When the population of wood bison from the Elk Island National Park increases sufficiently in size, the Wildlife Service intends to reintroduce them into the Park, but it will not happen for a number of years yet.



Buffalo in the Park, unconcerned about the passing traffic



A buffalo management program is carried out to achieve the objective of preserving the buffalo herds in a wild state and keeping the animals in good health. Periodically a selective slaughter of buffalo is carried out to maintain the proper ratio of bulls to cows in the herds, to assure that the herds do not exceed the capacity of their ranges, and to eliminate sick and aged animals.

Hay Camp (Buffalo abattoir) attempts to check every buffalo in the park. Any buffalo infected with tuberculosis or brucellosis is automatically killed during this annual check-up to prevent their infecting other animals in the herds.

In the summers of 1962, 63 and 64, anthrax caused the death of about 900 bison in Wood Buffalo National Park and in adjacent parts of the Northwest Territories. A control program of vaccination of as many bison as possible and surveillance of the area was carried out in the summers of 1965 and 1966. Vaccination with an avirulent anthrax spore vaccine (living) began in March 1965 and since that time the bacteriological examination of blood samples failed to reveal the presence of *Bacillus anthracis*. Unfortunately only about one third of the animals are vaccinated. In 1966, over 4,100 bison were vaccinated.

In 1967 the control program was limited to regular air patrols made over Wood Buffalo National Park and the adjacent Northwest Territories. Post-mortem findings and serological and histological studies continue to show that the bison population of Wood Buffalo National Park is still susceptible to brucellosis and tuberculosis.

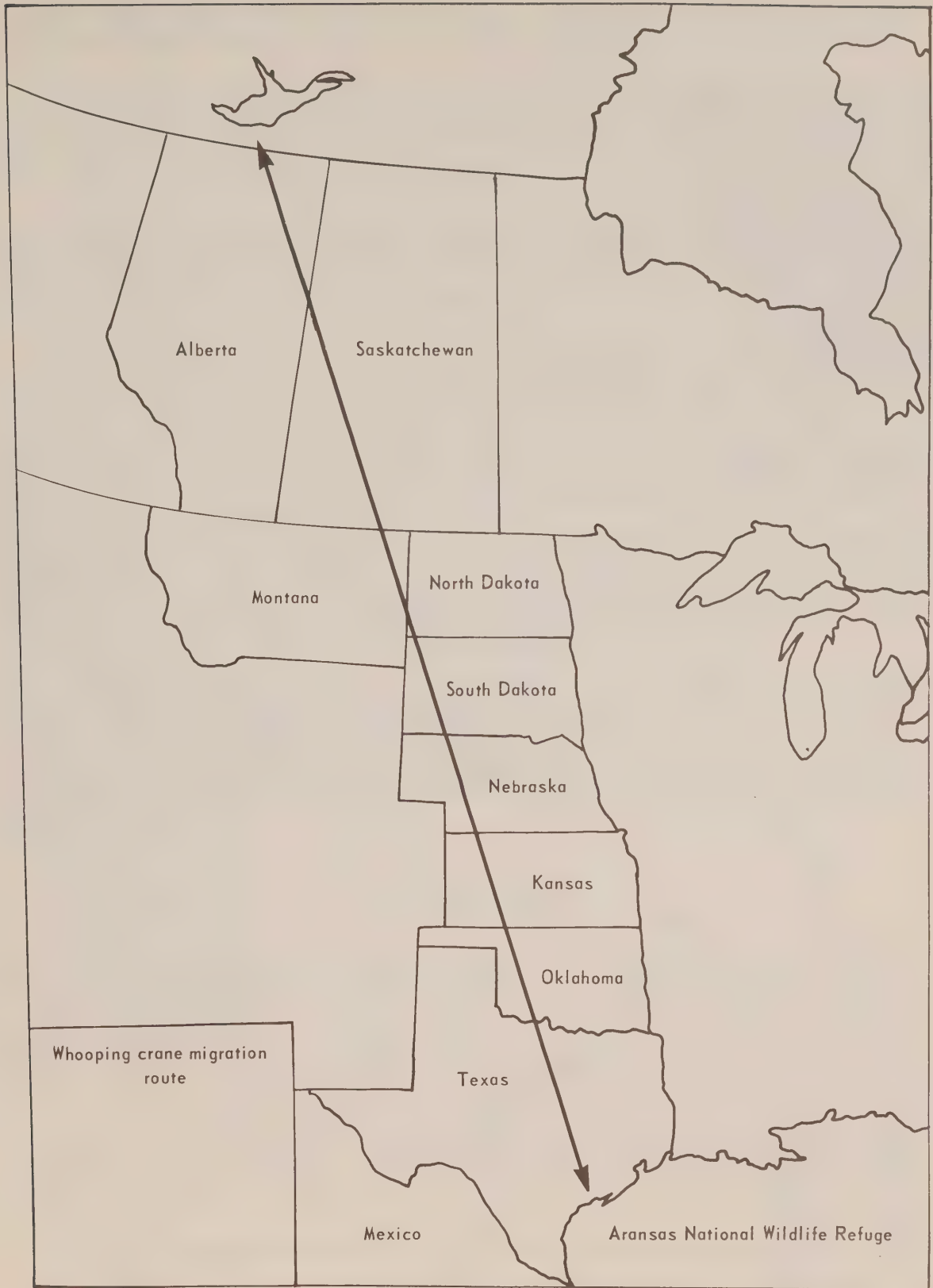
Because of the interest generated across the country in buffalo meat as an appropriate specialty food for centennial celebrations, a number of unusual arrangements were made to enable as wide a distribution as possible. Of the very limited supply available, approximately two-thirds was provided to Canadian specialty food caterers at Expo '67 in Montreal, in the hope that at such a national focal point the greatest possible number of Canadian would have a chance to taste it. The remaining one-third was distributed on a first come first served basis to groups and organizations planning special centennial functions of a non-commercial nature. The popularity of buffalo meat in Canada and the agreement of various provincial governments to establish commercial outlets led to a decision to make small herds available for buffalo ranching purposes. Buffalo would come at present from Elk Island National Park, and not from Wood Buffalo National Park. There is also a possibility that some Indian bands may take up buffalo ranching in addition to cattle ranching. The anthrax problem among the bison herds in the area is the factor that must be seriously considered before domestic mammals are introduced for testing or for commercial enterprises or for any other purpose.

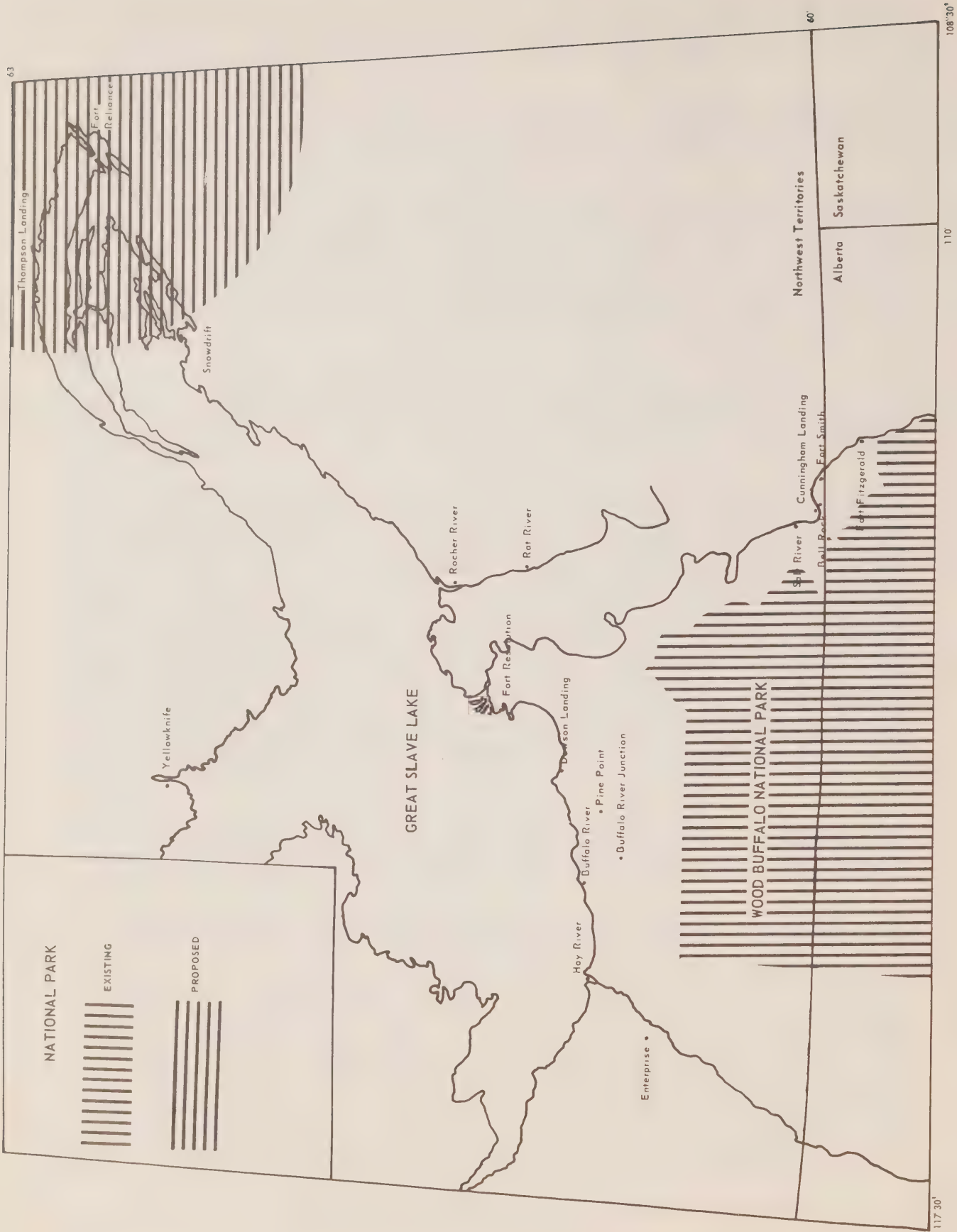
Whooping Crane Beside Buffalo, another animal found its haven in the Wood Buffalo National Park. The whooping crane was also on the edge of extinction, but has been fortunate because its plight has been dramatized through the mass communication media.

The whooping crane — *Grus americana* (Linnaeus) belongs to the order of Gruiformes. When standing erect, a large male stands more than five feet tall — the tallest of all North American birds.

Wood Buffalo National Park is the only known NESTING site of the whooping crane. Although the population varies by units each year, less than 50 birds exist in the world and these migrate each season from the Aransas Wildlife Refuge in Texas to their nesting grounds on the headwaters of the Nyarling, Sass, and Klewi Rivers, a remote and extremely inaccessible region of the park (map 7). The nesting area covers 500 square miles. No persons other than officers of the Canadian Wildlife Service, the US Fish and Wildlife Service, and the National and Historic Parks Branch are permitted to enter the Sass River area and aircraft flights over the breeding grounds are restricted. As of June 1968 there were 48 wild whooping cranes. There is some hope that the wild population will not only continue to exist, but eventually be increased.

The sandhill crane, a relative of the whooping crane, also nests in the Park and thousands of these birds stop over in the park during their fall and spring migrations.





NATIONAL PARK

EXISTING

PROPOSED

GREAT SLAVE LAKE

WOOD BUFFALO NATIONAL PARK

Northwest Territories

Alberta
Saskatchewan

117° 30'

110

60°

108° 30'

FUTURE PARK DEVELOPMENTS Several alternatives are currently under consideration for the future of the National Parks in the area:

- 1) Creation of a new national park including a part of the East Arm of Great Slave Lake. This would be the first national park entirely within the boundaries of the Northwest Territories.
- 2) Extension of Wood Buffalo National Park to Fort Smith, but not including the town itself;
- 3) As item No. 2 but including the town of Fort Smith.

A park on the East Arm could include a substantial portion of the upper extremity of the East Arm including the north shore from Bigstone Point eastward to the Lockhart River, the Kahochella and Douglas Peninsulas and the south shore from the general vicinity of Snowdrift to Fort Reliance. In the south the park could be bounded by the watershed of the Snowdrift River.

The East Arm of Great Slave Lake has superb aquatic resources set in a Precambrian rockland. The colour of the waters of the East Arm adds considerable beauty to the landscape. As one moves eastward up the Arm from the central body of the lake, the sediment load in the waters decreases. The water assumes a beautiful blue and blue-green colour. From the standpoint of natural history and scenic beauty it meets the requirements of the unique and representative in superb fashion. This is a part of the Churchill Structural Province, one of the largest divisions of the Canadian Shield. The Shield is now poorly represented in the National Parks, with the St. Lawrence Islands providing a very limited sample (.3 square miles) of the Grenville Province, a completely different structural division.

The East Arm has a Boreal Interior climate which is not represented in any National Park, not even in Wood Buffalo National Park. Rainfall is low. With the cool summer temperature this is an advantage for outdoor recreation activities. However, it does increase fire hazard. Snowfall is low on the East Arm. Considering the size of the open water of the East Arm, wind conditions are surprisingly good. The East Arm appears to have a noticeably longer frost free periods than Banff.

Mining offers the most important area of conflict with National Parks. Difficulties arise primarily from a concern for the loss of some yet undiscovered ore body rather than from a curtailment of current production. However, to protect mining interests, boundaries should be kept to the minimal requirements satisfactory for a National Park. Before the dedication of the park a survey of mineral potential similar to Operation Midwest or Overthrust would be desirable. The East Arm lies outside known mineralized area and it has been prospected for some time.

RECREATION

Recreation can be of the active, participating type, or of the passive, spectator type. In the survey area facilities for either type are being built or enlarged. In Hay River there is a whole recreational complex; in Fort Smith the ice arena, opened in October 1967, is probably the finest arena in the Territories. In Yellowknife there is "canned" TV. At other locations it is possible to have good reception on occasion, but the trials and frustrations militate against trying. There is a commonly expressed idea, that beside other benefits, TV would keep people in the North and reduce labour turnover. Radio is very popular in the area, and the CBC has currently in operation three Frontier Coverage Stations: Yellowknife, Northwest Territories and Lynn Lake, Man. in English; Havre St. Pierre, Que. in French. By increasing the power of a strategically located transmitter it is possible to serve two or three additional communities i.e. a transmitter at Pine Point would in addition service Hay River and Fort Resolution. Tentative on-air date for Pine Point is November 1968.

Present CBC Northern Service Medium Wave Radio Stations in the survey area are:

Location	Call Letters	Frequency (kc/s)	Power (watts)
Fort Smith	CBDI	860	40
Hay River	CBDJ	1490	40
Pine Point	CBDV	880	40

They are all unmanned low-power automatic relay transmitters, and the reception in the settlements and immediate vicinity is quite good. The programs are received from Yellowknife, a 1000 watt program centre.

During centennial year there was a variety of entertainment provided mostly by the federal government with inexpensive entrance fees. Among the programs offered were Ian and Sylvia, The Travellers, the Centennial Barge, the Confederation Caravan, a Jet flypast over Fort Smith, Hay River and other settlements, a 55 member RCMP band, and the performance by the Canadian Opera Company of "Don Pasquale" by Gaetano Donizetti. The Confederation Caravan visited Hay River and Fort Smith. The Centennial Barge brought two different exhibits that were not available to many of the southern communities. The Centennial Barge, the Territorial Government centennial entertainment project, was launched at Hay River by the Honourable Arthur Laing. While the Confederation Train and the Confederation Caravan were very similar in nature depicting mostly the history of Canada for the last century, the Centennial Barge depicted the life in Southern Canada and was mostly designed for those that had never been south. It consisted of two barges each 115' long. There was an exhibit in one and an "amusement park" on the other. The jet flypast, short in actual duration, but long in memory, made a strong impression on the people for whom the plane is a normal means of transport.

Recreational Activities in Pine Point There is a Recreational Association which is supported strictly by memberships of those interested. The Company, however, supplies some of the recreational facilities. For fishing, people go either to Little Buffalo River, which has poor fishing, or they can charter a plane to fly into Tsu Lake. There is very little in the way of good fishing close to Pine Point. Both the mines and the Pine Point townsite are attractive to tourists as Pine Point Mines continue its policy of conducting daily tours through the mill and the pits.

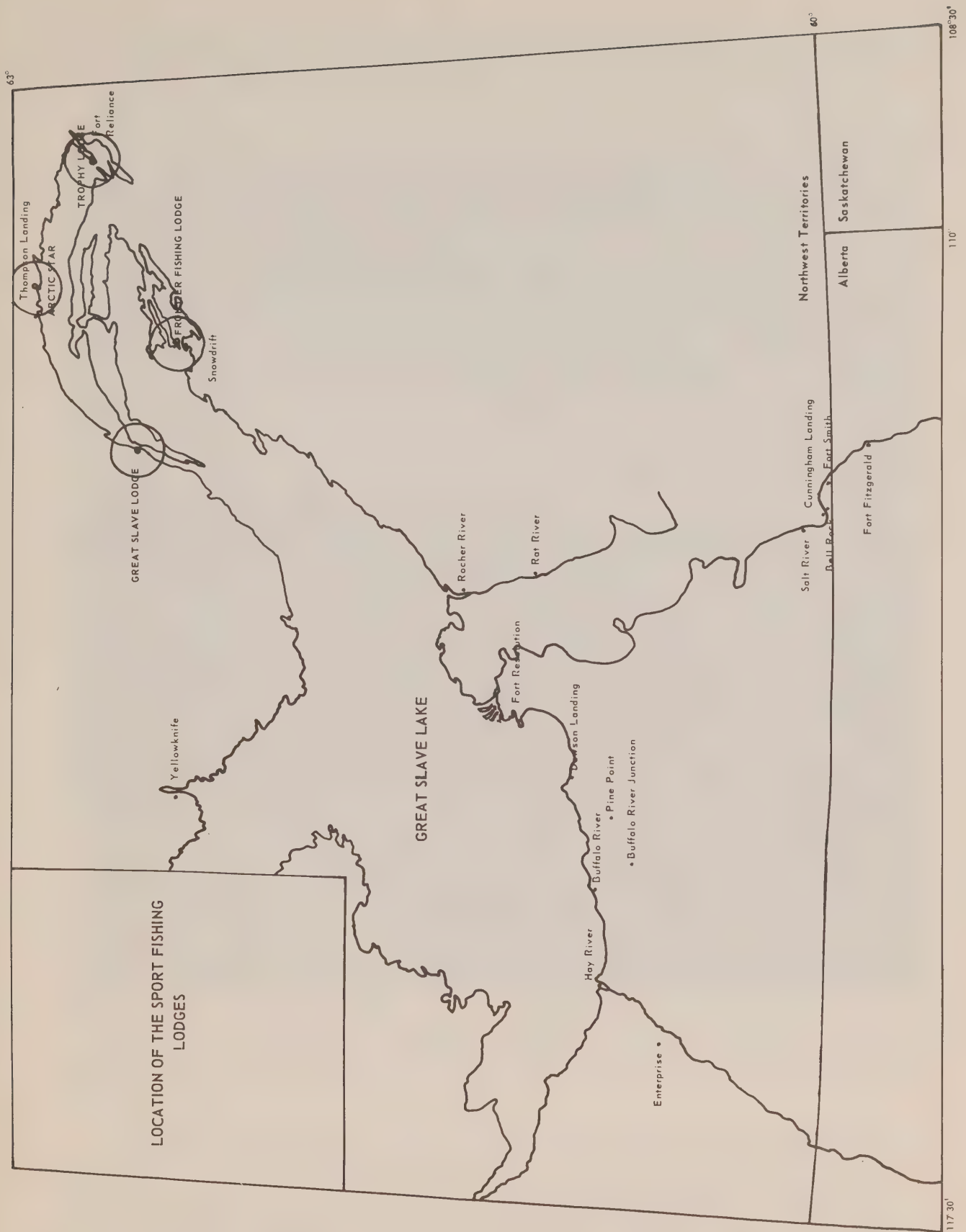
In the recreation centre there is a small gymnasium, curling rink, pool room, library, ping-pong table, some card tables and a cafeteria. The gymnasium was used to a limited extent for badminton, but appeared to be used mainly for the movies which are shown three times a week. The ping-pong tables were in use quite often, the card tables seldom, the library was open twice a week, and the pool room was constantly in use with a good crowd there at all times. There was some baseball played, but due to the moving of the baseball diamond there was no league and no organized activity to any extent. Although a great number of the workers, particularly the men in the bunkhouses, were of European extraction there was no soccer. The movies were not well attended, and even the beer parlour and the lounge were never more than half full.

TOURISM

The area of this survey is more easily accessible for potential tourists than other areas of the Northwest Territories. The area is endowed with features attractive to the tourists. Expansion possibilities for tourism, from the south as well as from local populations are favourable. Physical facilities intended for tourists in the survey area are reasonably advanced and relatively numerous. Out of the nineteen Territorial public camps maintained by the Mackenzie Forest Service there are eight within the survey area. In 1967 there were in the Northwest Territories eight hotels, four motels and nineteen fishing lodges. Out of these there were in the survey area 5 hotels, 3 motels and 4 fishing lodges. The Territories then, had 31 tourist operators, of which 12 were in the survey area, or more than 1/3 of all the tourist operations in the Northwest Territories. There are two items, however, missing from the area tourist scene, that are present elsewhere in the North:

- 1) Scheduled boat service on the Lake.
- 2) Space for a few tourists on a supply ship on Great Slave Lake.

These services are found very popular elsewhere, and preliminary indications are that their popularity would not be small in the area.





Frontier Fishing Lodge

There are four fishing lodges on the Lake. Frontier Lodge near Snowdrift, Great Slave Lodge at Taltzelei Narrows and Arctic Star Lodge at the confluence of the Barnstorm River, have many things in common: superb fishing, accomodation and service on par with or superior to southern located tourist lodges, and the ideal "get-away-from-it-all" wilderness location. Trophy Lodge in Fort Reliance with a capacity of 12 persons has its appealing differences. It is situated in the ex-RCMP buildings. Two new cabins have a capacity of 4 persons each as has the former special constable's house. A retired couple is running the lodge. There are boats with 6 HP motors but there are no guides. The kitchen commissary has a variety of fresh and frozen food with prices that do not differ materially from those in Yellowknife. Trophy Lodge is ideal for those who prefer motel type accommodation preparing food for themselves. Also having a boat without a guide may appeal more to a certain type of tourist.

Concomitant with the development of the tourist lodges was the development of native guides. The quality of guiding is particularly worth mentioning. In informal interviews a number of tourists expressed unqualified satisfaction. The people from Snowdrift had formal training and their services are considered indispensable. The Snowdrift people have displayed considerable aptitude for participation in the general field of outdoor recreation services as witnessed by their activities at fishing lodges. This working-education process is so effective that some Snowdrift guides can in the course of time certainly assume some managerial functions.

The picnic site at the Little Buffalo River waterfalls is on the right bank under which there is an impressive, but not visible abris. Were the site on the other bank the abris would be visible which would add to the attractiveness of the site.

Alexandra Falls is supposedly the biggest tourist attraction, but alas, has limitations of space as the road is situated very near to it. Falls have a water drop of 109 feet and the standard shape of a crescent.

The tourist information booth previously located at Princess Alexandra Falls has been moved to the Alberta-Northwest Territories border. The latter location is more functional and the booth serves on behalf of the Territorial Government as an unofficial welcome spot for visitors to the Territories.

Louise Falls has not a very high drop, but the shape of the falls is rather unusual. Were the amount of water bigger or the falls higher the shape would render them one of the most spectacular forms made by mother nature. The Louise Falls campsite does not lack space. The cook-house is completely enclosed.

Along the shore of Great Slave Lake near Hay River there are extensive sand beaches. Unfortunately, the backshore is not very deep. Nevertheless, there is ordinarily enough room for an access road as well as cottage lots and camping grounds. One important limitation is the susceptibility of the lake to storms and rough water which can make the southern shore dangerous to boaters. This area needs road access before it can be developed to any extent. The rivers between Hay River and Pine Point create pretty locations for camping grounds.

The road is presently being extended to the Little Buffalo River and this will open up a large area of fairly attractive land for tourist use. The river is excellent for boating and has fair fishing.

Between Pine Point and Fort Smith there are several points of interest such as the sink holes, playa lakes and the fossils at the falls of Little Buffalo River. The potential attractiveness of all these phenomena could be greatly enhanced by the addition of written descriptions and explanations. The sinkhole at Angus Tower is particularly impressive and should be advertised.

Fort Smith and the surrounding region has potential to attract and serve the tourist population. The presence of the buffalo herds is an important asset as is the wildlife and botanical research taking place. The setting and the historical development of the town is also of interest as is the museum but written information is needed on all of these. Within 25 miles of Fort Smith, most of which distance allows for easy road buildings, are a number of fairly large lakes and innumerable smaller ones which create the desired attractions and variety demanded by the majority of the travelling population i.e. wilderness setting, good



Little Buffalo River Waterfall

fishing, boating and swimming, lots of water and waterways and fairly rugged relief. This area could be tapped by a road from Fort Smith to Fort Reliance. By present routes it is 100 miles closer to Edmonton than is the tourist area of Yellowknife. There are class II beaches (ARDA Recreational Inventory Criteria) on the northeast side of Pilot Lake and possibly Class I beaches on the east side of Methleka Lake (Taltson River) near the southern end. Care should be taken to preserve and develop these to their fullest for the future. With a planned road from Fort McMurray, Alberta, to Fort Smith around the west end of Lake Claire it would be only 550 miles from Edmonton instead of 860 miles, which would put it as close as the Lac La Ronge area of Saskatchewan. The trip from Edmonton would be much more attractive as well, passing through the Tar sands crossing the Peace River and passing through buffalo country before entering this excellent fishing and lake country.

The building of summer homes by people from the United States, has made an encouraging start. There are three private summer homes built on the lake. Two of them are at Fort Reliance, one of which has a superb location. The third one, completed this summer, is situated at The Gap, which is a good location.

During the summer of 1966 there was a tourist survey carried out with the surveyors stationed at the Alberta-Northwest Territories border. The highlights of their findings were as follows: 3,125 vehicles of all types entered the Northwest Territories via the Mackenzie Highway during the period June 15-September 15, 1966. Of this total, approximately 25% were passenger vehicles registered outside the Territories, whose occupants were visiting for either personal reasons or pleasure. An additional 15% were "outside" passenger vehicles whose occupants were entering the Territories on business. 5,736 persons were carried from Edmonton into the Territories during this period by PWA. 8.8% were outsiders entering for personal reasons or pleasure. About 500 tourists entered the Territories via PWA. 60% of parties entering via the Mackenzie Highway were Canadian residents, 33% were American, and 7% were from neither the US or Canada. Two-thirds of all PWA passengers travelling for pleasure were from ten provinces, 24% were US residents, and 3% were not resident of this continent. The median length of stay in the Territories for Mackenzie Highway travellers was 4 days, and for the PWA travellers 6 days. Forty seven percent of all parties camped for at least one night; campgrounds provided the accommodation on 32% of "party days". Tourists who entered via the Mackenzie Highway between June 15 and September 15, 1966 spent approximately \$70,000 in the Territories. Those who flew in on PWA spent an estimated \$177,000 within the Territories. Forty-four per cent of visitors who entered by the Mackenzie Highway commented unfavourably on the dust. Even 15% of the parties who flew in by PWA complained of the dust on the Mackenzie Highway. Eleven per cent noted Hay River for its "dirty, dusty, run-down" appearance. "Lack of drinking water" was mentioned by 20% of visitors respecting campsites.

The list of favourable comments is not less impressive, but since this survey is primarily charged with improvements there is no particular merit in mentioning them. The common occurrence that requires attention is the lack of drinking water. With little expenditure and little effort this can be corrected.

TRANSPORTATION

Before the building of the highway and of the railway, the only established transportation route in this area was the Slave River. The area is now served by all four modes of transport: air, highway, railway, and water. As a result, the original transportation pattern has been profoundly altered. The highway and the railway run parallel to each other and it is at Hay River that rail and water transport connect to serve communities adjacent to the lake and others down the Mackenzie River. The development of land transportation facilities (railway, highway) is credited mostly for the economic development of the area.

A consequence of paralleling the railway to the Mackenzie River was a tendency to concentrate transportation facilities rather than to disperse them. The competition introduced by this paralleling resulted in reduced transportation costs to the North. This competition not only exists among the different modes of transport, but also within some particular modes of transport. That is particularly the case with trucking companies operating on the highway, and with airplane chartering companies. This competition resulted in expanded services and in decreased costs.

A consequence of the building of the railway was an increased imbalance in favour of Hay River as the main departure point for river shipping. This shift from Fort Smith to Hay River not only negatively affected development potential of the former but of all other settlements between the two points, as well as Fort Resolution.

Highway expansion is planned and it is legitimate to ask how the extension of the highway to Fort Simpson and ultimately to Inuvik would affect water transportation and specifically the fates of Fort Smith, Bell Rock, Fort Resolution and Hay River. To offset the rapidly diminishing importance of Fort Smith as a trans-shipment point various suggestions have been advanced. The main one is the construction of a road along Slave River. This highway is envisaged to extend to the eastern extremities of Great Slave Lake and its construction would be dependend upon that of a hydro-electric station on the Slave River in the vicinity of Fort Smith. Highway and possibly railway crossings near Fort Smith would be feasible and economical only if a dam were built in any case. All settlements and activities are located on the left bank of Slave River: Peace Point and Fort Fitzgerald in Alberta and Fort Smith, Bell Rock, Salt River and Fort Resolution in the survey area. Crossing the river south of the delta would service and open up a new area, but would simultaneously bypass existing facilities.

There is an alternative which would probably contribute even more to the growth of Fort Smith. A railway (or highway, or both) extension from Prince Albert, Saskatchewan, or Co-op Point on the Manitoba-Saskatchewan border would benefit Fort Smith and the eastern part of the Lake east of Pine Point, tremendously. Its influence would be felt particularly in those settlements that are not yet accessible by road: Fort Resolution, Rocher River, Snowdrift and Fort Reliance.

AIR TRAFFIC There are eleven air companies operating in the area. PWA has regular flights landing in Fort Smith, Hay River and Fort Resolution (app. II). Ptarmigan Airways Limited, flying from Yellowknife, has a mail service to Snowdrift. Outgoing mail go by any aircraft, courtesy of the pilot. Ingoing mail is exclusive to Ptarmigan. All eleven companies are competing with each other, even though there is a definite territorial division of the spheres of influence. In spite of that, the competition remains sharp. Locations of flights and customers are coded, but the competitors are usually able to decode each others' messages.

The airline companies in alphabetical order are:

Carter Air Service
Central Western Air Freight Ltd.
Gateway Aviation Ltd.
Keir Air Transport
Klondike Helicopters Ltd.
McPhail Air Services (Helicopter & fixed wing)
Northern Mountain Airlines
Northward Aviation Ltd.
Pacific Western Airlines Ltd.
Ptarmigan Airways Ltd.
Spartan Air Services

Beside the fixed wing and helicopter charter services Carter Air Service provides U-Fly service at Hay River. Here licensed, non-commercial pilots can rent a plane in the same manner as we rent-a-car in the South. The local population uses planes like taxis to get themselves about. For each chartered flying hour there is allowed one waiting hour, the waiting hours not to exceed four hours. For most charters the longest distance is thus two flying hours in one direction and two hours back.

At present there is no permanent airstrip at Snowdrift. The firebreak intended for it is wide and solid, but is some distance from the village. The village has as yet no road and no vehicles. If the airstrip is built, one pick-up truck would probably be enough to serve the settlement. There is a cleared strip closer to the village, but it is too small due to the configuration of the terrain. It is used for emergency landings of helicopters during the freeze-up and break-up periods. Air traffic by float-equipped planes though at times



Rush traffic hour – 3 planes anchored at the same time at Snowdrift



NOTICE

WINTER DRIVING CAN BE DANGEROUS
YOUR LIFE MAY DEPEND ON
PROPER EQUIPMENT
ALWAYS BE PREPARED FOR TROUBLES
DO YOU HAVE

WARM CLOTHING
WOODEN MATCHES
FIREWORKS
ETC

CHAIN OR CABLE
SHOVEL
FOOD

NAME _____

Winter driving can be dangerous – when the two neighbouring gas stations are 140 miles apart

is pretty heavy. In one day there were eight landings, three planes being docked at the same time. Completion of the airstrip at Snowdrift is recommended.

Fort Resolution, Fort Smith and Hay River are served by the Pacific Western Airlines (PWA) on scheduled flights. All three airports are without DOT towers.

Rates for scheduled flights between Edmonton and within the area in dollars are:

	Edmonton	Fort Resolution	Fort Smith
Fort Resolution	52		
Fort Smith	43	11	
Hay River	56	9	15

Current charge of aircraft freight is 6c per ton mile.

HIGHWAYS. At the begining of the gravel roads in the survey area there are posted maximum weights for vehicles with various numbers of axles. For five or more axle vehicle there is a maximum of 72,000 lbs, but special permits are issued for heavier vehicles. Roads are good and can take vehicles of almost any weight. Highway length from the Alberta-Northwest Territories border to Hay River is eighty miles; the linear distance is 71 miles. This highway is without sharp curves and would allow high speeds if it were paved.

Not only has the survey area a good portion of the Territorial highways, it also has the only access to the 250 road miles of the Alberta part of Wood Buffalo National Park. This is a circular route beginning and ending at Fort Smith and its quality is not uniform throughout. The first twenty miles on each side are very good, while the rest has occasional spring washouts which render it at times impassable. By the end of the summer the roads are usually suitable for all sorts of vehicles. Another short piece of highway, within the area, with similar characteristics is the one between Pine Point and Dawson Landing. This stretch of about 15 miles takes fifty minutes or more to drive. The new, short route has been cleared and since it is a continuation of the proposed highway toward Fort Resolution the work is being intensified.

The first stage of the reconstruction of the Hay River Highway through Hay River (locally known as Mackenzie Drive) was completed in the summer of 1967. It consists of two miles of subgrade from West Channel Bridge toward the old town and is built to a standard which will permit flexible paving, in case such an improvement should be decided upon at some future date.

FEDERAL GOVERNMENT INCENTIVE PROGRAM

The following figures give a picture of highway expenditures in the area:

Trunk Highway,¹ Resource Development Roads,² Area Development Roads³

1964	Allotments	Expenditures
Reconstruction Mackenzie Highway from Alberta		
boundary to Hay River	100,000	
Hay River—Pine Point (new road)	1,605,000	1,422,658
Pine Point—Fort Smith (new road)	239,500	213,668
N.W.T. Total	2,278,420	1,745,053
Rest of the Northwest Territories	333,920	108,727
TOTAL AREA	1,944,500	1,636,326

¹Trunk Highways are roads connecting the Territories and the provinces, or main centres within the Territories.

²Resource Development Roads are minimum standard roads from the nearest permanent road to an area where two or more projects have reached pre-production - production stage.

³Area Development Roads are low standard roads leading into or through undeveloped areas of favourable natural resources, to foster new growth.

1965	Allotments	Expenditures
Dust control railway crossings	7,500	47
Reconstruction Hay River highway within Hay River . . .	11,090	
Hay River—Pine Point (new road)	635,000	612,791
Pine Point—Fort Resolution (new road)	50,000	28,307
Pine Point—Fort Smith (new road)	830,000	830,000
N.W.T. Total	1,691,417	1,560,434
Rest of the Northwest Territories	157,817	89,289
TOTAL AREA	1,533,590	1,471,145

Total expenditures (provisional) for trunk roads, resource development roads and area development roads for the Territories in 1966-67 were \$4,003,862.92. No detailed breakdown is yet available but we can safely assume that the survey area is again getting the lion's share.

For all roads built in the area, the Federal Government bore the entire cost.

Maintenance cost for the highways in the area per annum per mile was:

1963-4	\$1,050	1964-65	\$1,450	1965-66	\$1,773	1967-68	\$1,620
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Maintenance cost in the survey area per annum per mile for the highway is about \$1,500, while for the railway is about \$2,800. Highway life-time is calculated at 25 years. Proportional to the highway mileage within the area is the number of highway jobs. In Fort Smith there are two and at Enterprise there are 26. Of a total of 51 Mackenzie Highway positions, 28 are in the area.

Taxies are much in evidence both in Fort Smith and in Hay River. Hay River, due to its fractured appearance and the necessity for frequent taxi rides, has set rates that were suggested by the town council and accepted by the local taxi companies. They are based on the "pro-rating principle" i.e. the fare is divided equally among the passengers. The rates are:

Old to New Town: \$2 + 50¢ each additional passenger;

New Town to West Channel: \$3 + 50¢ each additional passenger;

New Town to Airport: \$2 for first two passengers + \$1 each additional passenger; for all rides children under 12 pay 25¢ when accompanied by an adult; and for all the taxi fares, the "New Indian Village" is considered part of the old town.

There is a daily scheduled bus service from Alberta to Hay River, Pine Point and to Yellowknife. The prices are popular and there are regular bus stops. Drivers are willing to stop on request anywhere along the route for picking up or discharging of passengers.

RAILWAY. The Great Slave Lake Railway was built in conjunction with the development of Pine Point Mines. The Railway was not only completed ahead of schedule, but at a cost below the amount that was allocated by Parliament for the job. It is the first railway to cross the 60th parallel into the Northwest Territories. Construction of the project started on February 12, 1962 and the first track was laid during the winter months of 1964. Crews tied up before Christmas when temperatures reached 47° below zero.

The railway has a single track, which is quite sufficient at present. The clearance is wide enough to permit the laying of a double track, if the need appears in the future. The railway is almost fully automated. Maintenance crews, on the other hand, do not differ in number or in composition from other railways.

Until this railway was built, the entire pattern of south-north transportation facilities was identical in one respect: many goods were moving northwards, while the southbound freight was infinitesimally smaller. With the opening of the Great Slave Lake Railway, a paradoxical situation developed regarding the



Highway bridge across the Little Buffalo River

established pattern. It is unique among northern transportation facilities in that it has southbound tonnages exceeding the northbound, and exceeding them in fact many times. Southbound freight on the Great Slave Lake Railway is substantial, and the figures are found elsewhere in this report. Northbound freight was very modest and consisted in 1966 of 214 carloads handling 10,000 tons. In 1967 there were 21,000 tons in 407 carloads. The northbound shipments consisted mostly of cement intended not only for the area, but also for the points further downstream on the Mackenzie River. The Railway does not accept less than carload lots. From Roma Junction to Hay River the per car charge on general merchandise is \$347, which is about 2.26 cents per ton/mile.

Building the railway had far-reaching economic as well as sociological consequences for the area. The railway decided to train a number of Eskimos at the job of running their highly automated operation. There are 32 Eskimos working on the railway now. All have adjusted well to their new life and are considered competent at their jobs.

WATER. The water navigation season is dependent on break-up and freeze-up dates. The Slave River navigation season usually opens on May 15 and closes on October 20 giving an average duration for the shipping season of 158 days. Ice on Great Slave Lake lingers a little longer than on Slave River, and makes the shipping season correspondingly shorter.

Great Slave Lake varies considerably in depth. While in the East Arm the deepest measured point is 2,015 feet, at the entry of Slave River it is only about 5 feet or less. Regular dredging there would improve and accelerate shipping operations. The main corridor is now not sufficiently marked and even experienced skippers have difficulties keeping their tugs from going aground. The fleet of tugs and barges is designed to take this shallowness into account; their draft is only five feet and their propellers lower than the bottoms of the vessels, so that they are able to free themselves from grounding.

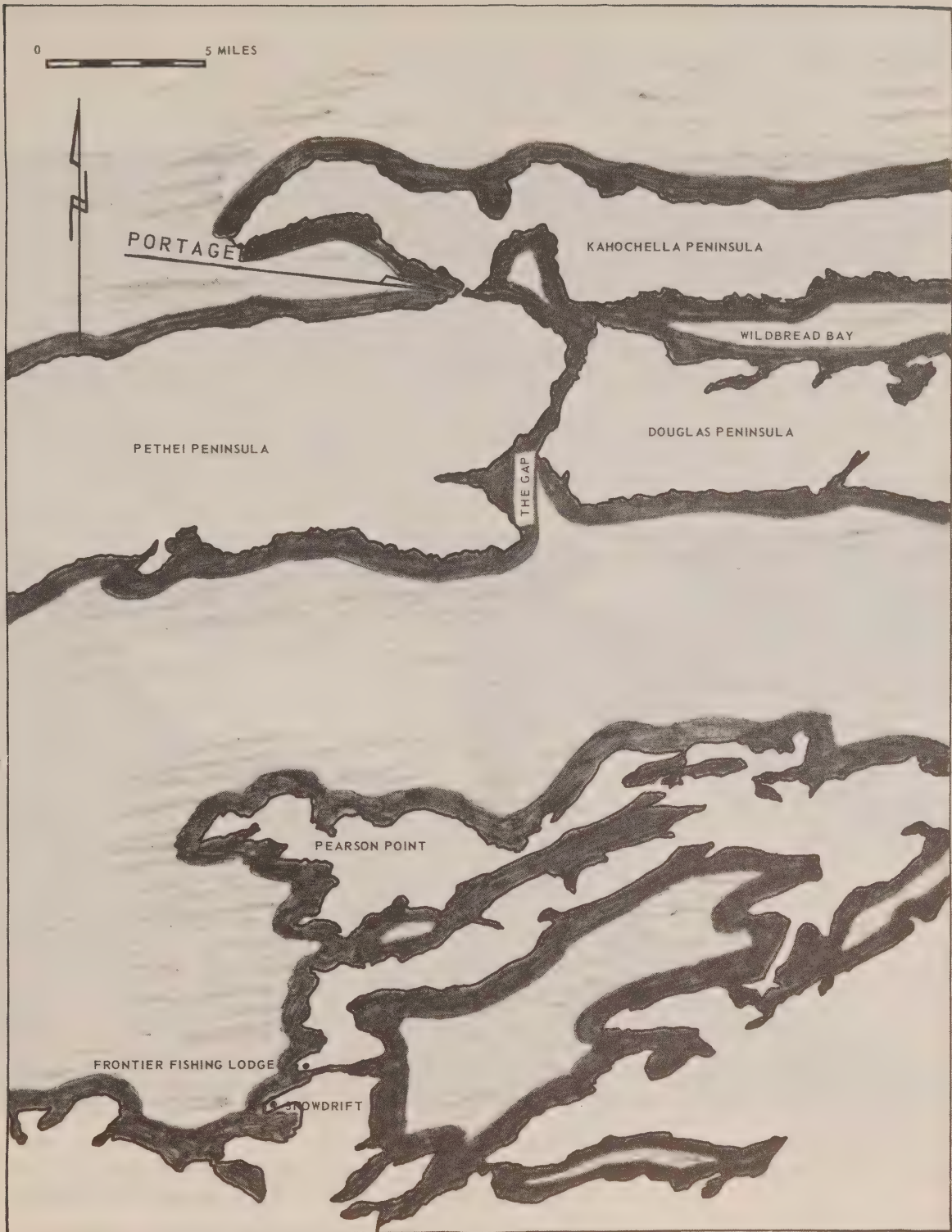
The people on the Lake prefer travelling at night because the wind is much weaker in their view and daylight is practically continuous during the open season. Observations of the weather does not completely support this view.

In the East Arm of the Lake water navigation, due to the numerous islands and the very peculiar shape of the Pethei Peninsula, differs considerably from the open water navigation in the western part of the Lake. Pethei Peninsula is a long natural barrier to water communication between Snowdrift and Fort Reliance. The bigger boats go around Utsingi Point. This doubles the distance between the two settlements. Canoes and small boats go through the portage (map10) which is only about 50' long and about 3' high at the highest point. Blasting the portage would be a relatively simple and inexpensive undertaking, and would bring satisfaction to the people on the Lake. Fisheries officials state that blasting of the portage would have no adverse effects and might even be beneficial, as it might allow the fish population to migrate and develop in a more tranquil surrounding.

On the Slave River and on Great Slave Lake the Northern Transportation Company and the Hudson Bay Company were running two parallel and competitive transportation systems. The NTCL had docking facilities at Fort Smith and Bell Rock, the HBC at Cunningham Landing, and both at Fort Fitzgerald. Twenty one years ago, in 1947 the HBC discontinued operation as a common carrier and that marked the end of Cunningham Landing.

Fort Fitzgerald and Bell Rock are interdependent being on either side of the portage. At Fort Fitzgerald the goods are unloaded, trucked to Bell Rock, and then loaded again on a new set of barges. Although the total tonnage of goods being brought into that general area is increasing, the eastern water route is decreasing both in tonnages and in importance. The western alternate route is in contrast increasing dramatically. To illustrate this, the total tonnage for 1966 ex Fort Smith/Bell Rock was 2,707 tons, while the corresponding figure for Hay River was 33,333 tons.

In Hay River space limitation is serious; in Bell Rock space is unlimited. NTCL is now expanding the facilities at Hay River. The "dry dock" at Hay River outgrew the available space adjoining the river, and now it has expanded across the road. When transporting a vessel across the road special equipment has to be





Portage, Pethei Peninsula

used, and traffic has to be interrupted. It is fortunate that at Hay River there is an alternate terrestrial traffic route, so that blocking the traffic causes inconvenience, but no serious handicap. Northern Transportation Company Ltd. spent \$444,000 during 1966 at Hay River for major installations and on relocating, enlarging and refurbishing the facilities. New bunkhouses, an office and a warehouse were built as well.

NTCL authorized 50,000 shares of no par value and issued only 1,520 shares, which are fully paid for with \$152,000 or \$100.00 per share.

TELECOMMUNICATIONS: In the survey area there are telephone, telegraph, teletype, telex and radio telephone systems. Canadian National Telecommunications operate two systems in the survey area and beyond:

1. "The Yellowknife landline" from Hay River to Yellowknife and Fort Smith; Pine Point and Fort Resolution being connected to this system by VHF radio, and the
2. Tropospheric scatter system with the originating point at Hay River,

The Telegraph rate for 15 words fast telegram or 50 words night letter for delivery next morning from Hay River to Fort Smith or vice versa is 90 cents.

Telephone Exchange classifications and \$ rates per month are:

	Local			Residence service		
	individual	two party	multiparty	individual	two party	multiparty
Enterprise, Fort Resolution, Fort Smith, Hay River, Pine Point	12.00	9.00	5.00	6.00	5.00	4.00

	Long distance			Night and Sunday*		
	Day except Sunday station to station	person to person	each addl minute	station to station	person to person	each addl minute
Hay River to Fort Smith or vice versa	1.35	2.00	.45	1.00	1.50	.30

* Night and Sunday rates apply from 6 p.m. to 4:30 a.m. daily and all day Sunday.

WELFARE

Welfare services in the south consider an income in the region of \$250-280 a month to be low. If we add \$100 to allow for the cost of living in the North, we may tentatively accept that \$350-380 a month or approximately \$4,200 to \$4,500 a year is a low income in the survey area, for families not having access to country food and aspiring to an Euro-Canadian living standard.

The criticism is often heard that Welfare payments are too little to live on, yet big enough to discourage private initiative and enterprise. Some recipients of welfare payments expressed their preference for the termination of all welfare payments. The Indian chief at Fort Smith thinks that without welfare the Indian lot would be better. In the area the welfare payments are tied in with the social work program. An employee with the degree of a Master of Social Work holds regular monthly interviews with welfare recipients. The fruits of this labour are ripening. In Snowdrift, for example, there is now only one recipient of welfare payments, with another one who has some physical impediments, possibly going to be added.

Dollar value of welfare payments for Fort Smith, Fort Resolution, Rocher River and Hay River and area for a twelve months period.

April 1, 1966 to March 31, 1967

	Territorial Government	Indian Affairs Branch	Northern Administrations Branch	Total
Expenditure	\$88,240,98	84,424,00	1,193,30	\$173,858,28
Number of families	182	132	3	317
Number of individuals	539	361	3	903
Average per family per annum: \$548				
Average per individual per annum: \$192				

SETTLEMENTS

The most important past and present settlements in the area are: Hay River, Buffalo River, Buffalo River Junction, Pine Point, Dawson Landing, Fort Resolution, Rocher River, Snowdrift, Thompson Landing, Fort Reliance, Enterprise, Rat River, Salt River, Cunningham Landing, Bell Rock, Fort Smith. We can divide them into those that are growing, those that are more or less in a steady state and those that have practically ceased to exist. Into the first group we can put Hay River, Pine Point, Snowdrift, Enterprise, Buffalo River Junction and Salt River. Into the second category, of the 'steady state' ones, would come Fort Resolution, Rocher River, Fort Reliance, Bell Rock, Fort Smith. Declining or practically non-existent now are Buffalo River, Dawson Landing, Rat River, Cunningham Landing, Thompson Landing. A new transportation route, or the development of a yet undiscovered non-renewable resource, could change the vitality of these settlements significantly.

The naming of the settlements is of interest; there are "Forts", "Rivers" and "Landings". "Fort" towns (Fort Smith, Fort Resolution, Fort Reliance) usually are the oldest in the area, all of them having been in existence before the turn of the century. "River" towns (Hay River, Buffalo River, Rocher River, Rat River, Salt River) are built on the banks of rivers of the same name, except Rocher River, which is built on the banks of the Taltson River. "Landing" towns (Dawson Landing, Thompson Landing, Cunningham Landing) were based on water transportation facilities. Beside these three main groups of settlements there are those with distinctive names of their own, which also have a distinctive character: Bell Rock, Pine Point, Enterprise, Snowdrift.

All the settlements that are on the south shore of the lake would normally face north, but none of them do so. The biggest part of Hay River faces east-west; so does Rocher River. Three other settlements, Fort Resolution, Snowdrift and Fort Reliance all face south, as the sites were well chosen. Each of them is built on a peninsula that makes 180° loop.

Pine Point is almost entirely populated by whites and Snowdrift almost entirely by Indians. In the mixed towns, physical segregation is least apparent in Fort Resolution, while in Fort Smith and Hay River the parts referred to as "Indian Village" are not the most desirable parts of town.

Beside the communities themselves, there are a number of isolated buildings in the area. At Grand Detour there is a Government cabin and a cabin owned by Brewster Mountain Pack Trains. There is a Government cabin at Hook Lake and a shack-tent camp north of Hook Lake, plus two cabins owned by Northern Safaris of Sundre, Alberta. There are hardly any indigenous camps at present in the survey area.

Of the four towns in the Northwest Territories two are in the area: Fort Smith and Hay River. They are both incorporated with elected councils and with taxing and borrowing authority. The towns have powers to borrow funds to a maximum of 20% of their property assessment, which means that Fort Smith can borrow more than a million dollars, while Hay River can borrow almost \$600,000.00. Fort Smith was based on Governmental activities and had seen spectacular growth during and after World War II. In commercial-based communities growth was slower. They approach major municipal development (and debt) with caution. The two towns employ full time staffs, and both have quite adequate new town halls.

Area residents in Fort Smith and Hay River can vote for all three levels of government: Municipal, Territorial and Federal. With the move of the Territorial government to the Territories the voting on the Territorial level has acquired even more meaning than it has had before.

In the Mackenzie District the Territorial Government assumes responsibility for roads, water and sewage services in many unorganized communities, and these include such communities in the survey area. The two levels of government built houses, streets, and sanitary facilities in advance of population growth in Fort Smith and in Snowdrift. For domestic water Fort Smith and Pine Point have buried pipe; in Fort Resolution the water is trucked, in Hay River both systems are used depending on the part of the town; and

other settlements have either local river or lake water supply. There are walk-in refrigerators or community freezers in Fort Resolution, Snowdrift, Fort Smith and Rocher River.

In the year 1967 there were six weekly newspaper printed in the Territories, three of them in the area: the "Norther" in Fort Smith, "Tapwe" (Cree for Truth) and "Hay River News" in Hay River.

Effective Dates of the Municipal Development in the Area

Settlement	Local improvement District	Development Area	Municipal District*	Village	Town
Enterprise Fort Smith Hay River Pine Point	Nov 15'1954	Sept 28'1960 July 10'1957 Apr 21'1949 Dec 12'1963	Jun 25'1953	April 1'1964	October 1, 1966 July 19, 1963

*Municipal District designation is longer in use.

On the pages that follow there is a brief discussion for each particular settlement, of matters that were not raised elsewhere in this report.

Buffalo River Junction

At Buffalo River Junction, where Highways 5 and 6 divide, the Department of Public Works is setting up a small community and a garage for its equipment. In the summer of 1967 there was one house, four occupied house trailers, and a considerable number of other accommodation trailers for road construction purposes. It seems unfortunate that the Department of Public Works is setting up such a community only 15 miles from Pine Point. Many services that are in Pine Point have to be duplicated at Buffalo River Junction, and the children coming to the settlement have to be transported either to Hay River or to Pine Point for their education. The women have also to go either one way or the other to do their shopping. It will be a very small isolated community with little chance for social interaction. This would be detrimental to the area and a waste of economic resources. Buffalo River Junction has some similarities to Enterprise, being erected on that particular site simply because of the existence of the highway junction.

Dawson Landing

The Northwest Territories Tourist Office has set up a picnic shelter and some tables at Dawson Landing. There is no docking facility at Dawson Landing, but it is questionable whether one would serve any purpose due to the very shallow offshore water. The fish plant there was not in use in the summer of 1967. It was suggested that Dawson Landing or Pine Point might be a better place than Hay River as the centre of the fishing operation as Dawson Landing is more centrally located. Hay River is at the extreme west end, which creates the problem of overfishing in the western end of the lake. Boats from the East Arm of the lake would offload their fish at Dawson Landing where it would be processed and then shipped quickly by road to market. This would reduce the time loss in boat trips from the area of Dawson Landing to Hay River which now occurs. This would require a much better road than the one presently existing between Pine Point and Dawson Landing and the construction of good docking facilities at Dawson Landing. People would have to be brought to work in the fish plant during the season. Housing and other facilities would have to be developed at the same time.

The people in Pine Point use Dawson Landing to a certain extent as a recreational area. The road is tortuous and hard on tires; the 15 mile trip takes about 50 minutes by car, but people do go there for picnicking. Some cottage lots have been surveyed and the survey posts are in, but no construction of any type has taken place recently and the shoreline is several feet deep in wood which has been washed up from

the lake. It would be quite a task to clear this area and then the shoreline would still not be amenable to family recreation because the shore is very stony and the offshore is not good. But as there is a shortage of recreational facilities in the Pine Point area it is expected that Dawson Landing would be used more frequently in the future.

Fort Reliance

Fort Reliance was constructed on the East Arm by Capt. Sir George Back, in the late eighteenth century, only a few years after Hearne's journey. In the early twentieth century the people relocated to the strategic position at the tip of the Fairchild Peninsula. There is a story that Fort Reliance started losing population when the RCMP established a station at Fort Reliance. This, if true, would be a reversal of the trend in other settlements where the RCMP establishment encouraged the settling of the population. The Fort Reliance RCMP detachment officially closed January 25, 1961 and since that time the population has fluctuated between Snowdrift and Fort Reliance. In the settlement there is a meteorological station with three or four technicians and a cook. Trophy Fishing Lodge is situated in the ex-RCMP quarters. A white trader built a home on the beautiful spot and named it "Chateau Wolverine" in tribute to the fur-bearer which contributed mostly to the income of the trader.

Fort Resolution

Looking from the lake, Fort Resolution is impressive in its whiteness, particularly the RC compound which consists of a church, convent, mission hall, hospital and garage. The setting of the settlement is idyllic and on the best available spot closest to the entry of Slave River into Great Slave Lake. The beginning of the settlement is traced back to 1786 and for many years it was the main settlement on the Lake. With the development of Fort Smith, and even more, after the development of the western alternate transportation route, Fort Resolution began to stagnate, losing the strategic importance that the original water transportation route had given to it. The problems of the town are economic: Fort Resolution did lose its economic base and did not find an alternate source of meaningful employment and of income for the majority of its population.

Fort Resolution has an electric power supply, but the whole settlement does not yet benefit from it because current generator capacity is insufficient and because the fire-marshall would not authorize the installation of wiring in many dwellings. Generating capacity is planned to be increased.

As a winter work project a 5,000 gallon water reservoir was built at the lake and then moved to the centre of the town, where it serves as a monument to inefficiency. It is unconnected, and even if connected could not supply the whole town with water. Supplying only part of the town would create more problems than it would solve. A settlement of the size of Fort Resolution, needs a water-reservoir capacity of about 40,000 gallons. Building one in the town would alleviate many problems of hygiene, and cut down on many associated health and other costs.

As the summer approaches the Fort Resolution people seek employment in and away from the community. The distribution of free buffalo meat in Fort Resolution is indicative of the seasonality of their employment and the decreasing need for help as jobs become more available.

	families	persons	pounds
March 16, 1966	33	177	1,115
April 23	28	153	1,030
May 7	30	101	710
May 27	19	33	437
June 10	26	29	570
June 25	14	18	330

Distribution of meat is done according to families and every family receives the same, regardless of the number of people in that particular family. There is a list compiled and there is a notice at the end of the list. "Absolutely no meat to ANYONE NOT INCLUDED in this list." Families vary in size from one adult to one adult and 12 children.



FORT RELIANCE

Fort Resolution is a fair-sized community of about 600 people and the only government representative is a Game Officer. The town administratively belongs to the Fort Smith area, but the seat of the area administration was moved from Fort Smith to Pine Point.

The number of cars is surprising taking into account that the community is compact, and that there are no roads leading away from or into the community. One local man frequently trades in his car for a current model for driving around a town that is only one mile in diameter.

Fort Resolution is predominantly an Indian community where many traditions are preserved, and yet the way is wide open for new values and new traditions. Dominion Day, July 1st, sees the fusion of the two. The whole community becomes one big family, sharing the food. A community meal was held in the chief's house. Buffalo meat was supplied free by the Department and the meal took hours. At any one time there were as many persons as could be accommodated in the average size house. The Tea Dance followed. Participants were of both sexes and of all ages. Although there is not any intricate footwork in the dance, the rhythm is hypnotic, and the young people did show a great respect for it, by being eager to participate. On the next day, a western type dance was held, which was again patronized by the same people. The people in their dress, attitude, and aptitude for dancing demonstrated that they feel equally at ease in both traditional and western dancing and cultural idioms. All segments of the village were represented, and the judge for the selection of the best dancing couple was the — catholic priest. A teen-age club called the "Swinging Teens" has its club rooms in the convent. The church, probably mainly because of the personality of the priest, is closely linked with the local population. The priest officiates in English and in Chipewyan. The locals respond by supplying volunteer labour.

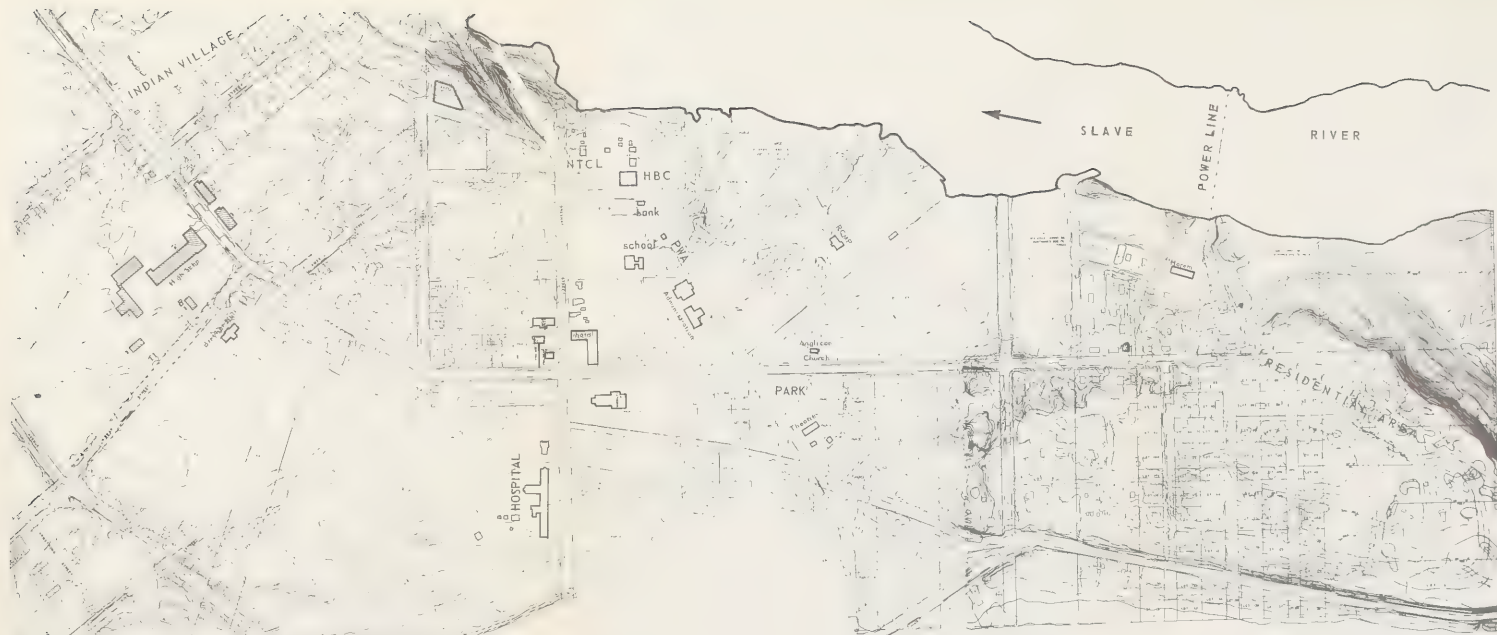
At Fort Resolution there is a "recreation director" who has been coming in each summer. He is a mature bilingual university student from Manitoba. While the Roman Catholic Church was expanding at Fort Resolution they had a summer camp for children at Little Buffalo River. Now that the mission is dwindling away the new recreation director does not use the camp any more. The camp has an excellent location but it has been sorely neglected, though it should be kept in permanent use. Financing of the project is a ticklish question, now that the Roman Catholic Church is limiting its funds and its free labour. Since there is no sand beach in the vicinity of Fort Resolution, and as the road is being completed to Little Buffalo River, the existing facilities may get more rational use.

Fort Smith

On the water-route from Waterways, Alberta, to the Arctic Ocean, over a length of over 3,000 miles, there is only one group of unnavigable rapids: Cassette Rapids, Pelican Rapids, Mountain Rapids and Rapids of the Drowned. All these rapids are distributed over a length of only seventeen miles, where portage is inevitable. At the northern extremity of the portage, on a very good site, a settlement began to form in 1874. That was the beginning of Fort Smith.

After the demarcation line between the Territories and the Provinces was drawn in 1905 at the sixtieth parallel, Fort Smith found itself only several hundred yards within the Territories. This geographical fact and the need for government representation in the North, gave to Fort Smith another important stimulus for growth. The first government representative with a permanent seat in the Territories was stationed at Fort Smith in 1912. Since that time, Fort Smith has been rapidly gaining in importance in its two main fields of endeavour: transportation and government administration.

Fort Smith is erected on a site that is about 135' above the Slave River level, overlooking mostly flat terrain on the east side of the River. At Fort Smith there is no permafrost, a feature which facilitates the excavation and the construction of buildings, and increases the stability of the superstructures. Being favoured with an unlimited suitable site, lack of permafrost, and other, non-geographical factors, Fort Smith was expanding relatively rapidly, particularly in building construction. Schools, hospital and office space and, with some exceptions, housing are not only sufficient, but in some instances exceed present requirements. Fort Smith is probably the only settlement in the Territories, where no building is beyond the reach of full hydrant-hose protection.



Fort Smith

Due to the practically unlimited size of the townsite, Fort Smith is fairly dispersed, leaving many vacant lots within the built-up area. So there are in Fort Smith several distinct parts of the town, two identified by their specific names: "Indian Village" and "Welfare", the distinctive character of which is apparent. There are huge 'stores' in the town serviced by road from Hay River. There is frequent mention of the probability of moving these governmental supply stores to Hay River. At Hay River there is some store expansion, but the complete transfer of facilities from Fort Smith has not been planned. Another public institution at Fort Smith is the Children's Receiving Home. On the day of proclaiming Yellowknife a Territorial Capital, the Minister, Mr. Laing, promised an Old Folk's Home for Fort Smith.

There is a little library in the ground floor of the District Administration Building. The library is the size of an average room. Regional libraries had a \$2 per capita grant from the Centennial Commission and a \$1 per capita grant from the Territorial Government. Fort Smith transferred its share to the arena.

The roads serving Fort Smith, the streets within Fort Smith and the Airport road total 15 miles. The present cost of chemical dust control in Fort Smith is \$6,000 annually, or \$400 per mile.

In 1945 NTCL chose Bell Rock as a more desirable site for the downstream end of the portage, and built three docks there. Fort Smith continues to serve a function for Bell Rock, while Bell Rock itself is limited to its transportation services. All other services and facilities for Bell Rock are in Fort Smith. Thus, Fort Smith has been bypassed as a transportation junction, but has nonetheless continued to grow as a service and administrative centre, particularly with the expansion of government services in the North in the last decade.

The Government of the Northwest Territories was formed in Ottawa in 1905 and 62 years later, on January 18, 1967 it was announced that the seat of the capital was to move to the Territories, to Yellowknife. For several decades governmental activities and administration were Fort Smith's principal "industry". Fort Smith was an administrative headquarters of the Department of Indian Affairs and Northern Development for the Territories and in the town there was a conglomeration of:

1. Territorial Administration
2. District Administration
3. Regional Administration
4. Area Administration

Out of the eight Indian Affairs Branch regional directors in Canada, the only one in the Northwest Territories is posted at Fort Smith. The territorial administration is gradually being transferred to Yellowknife, and the area administration has already been moved to Pine Point. At Fort Smith there are still the District and Regional administrations and it is likely that they will remain.

At the time of the investigations of the Carrothers Commission, which among other duties had to propose the seat of the Territorial Government, Fort Smith had high hopes of being chosen. The choice of another site did not significantly discourage the inhabitants of Fort Smith, nor did it diminish their faith in the future of the town. It was seriously threatened with economic decline but remedies were sought eagerly.

To offset the somewhat unexpected choice of another site for the capital, several propositions were advanced, the most unusual one suggesting to create one nominal and another actual capital. Under this scheme, Yellowknife would be a capital by name only, while all governmental administration and institution would remain in Fort Smith. Fort Smith is seen as the base of a series of governmental and commercial operations that have not necessarily to be tied to any particular place.

To allay the concern of the business community after the naming of Yellowknife as the capital, Commission recommended "that examination be given to the question whether any person who can show

satisfactorily that he established himself or expanded his establishment in Fort Smith after 1962 in reliance on the expectation that it would become the capital and has been prejudiced thereby, should be moved at public expence to Yellowknife if he so wishes, or be compensated accordingly". No one at present seems to be affected, but the government is willing to consider possible future submissions. Loss of the administrative function is the main concern of Fort Smith because 70 to 75 positions would probably move from Fort Smith to Yellowknife.

Municipal Revenues and Assessments for Fort Smith

(A) SOURCES OF REVENUE

	1962	1963	1964	1964 Per cent of revenue	1965
Real property tax levy			11,154		
Licences and permits			83		
Total local revenues			11,237	13.2%	
Territorial grants					
Assessment grant			31,678		
Shared cost grant			8,031		
Total Territorial grants			39,709	46.7%	
Federal grant in lieu of taxes.			33,988	40.1%	
Total Governments grants			73,697	86.8%	
Total revenues			84,934	100.0%	

(B) REAL PROPERTY ASSESMENTS

Taxable real property	800,768	1,050,606	1,115,404	6,522,844
Crown exempt real property	3,124,144	2,834,890	4,024,630	11,706,659
Other exempt real property	291,500	460,830	472,868	
Total real property assessment	4,216,412	4,346,326	5,612,902	18,229,503

The figures for 1965 are disproportionately high compared to those for the year 1964. In the 1965 figures, the actual land value is included and the REPLACEMENT value of buildings and equipment. The aggregate real estate property, according to this, exceeds \$18,000,000.00.

Hay River

On the Town Hall official letterhead, there is an imprint: 'Hay River — Hub of the North; The Frontier of Opportunities.' These two statements are intended as a booster for the town, by the local Chamber of Commerce, but an impartial observer has to admit that they are indeed true. Bearing in mind that Hay River is the only town in the Territories that has railway, highway, air and water transport, and that Hay River is the originating point for the tropospheric scatter system for the Canadian North, the claim that it is the 'Hub of the North', is not immodest. The "Frontier of Opportunities" has broader implications.

Hay River consists of five separate communities, not integrated with each other, due to the whim of the geographical setting. The dispersed development of Hay River accentuates local service costs. Vale Island is approximately ten square miles in area, but only about ten feet above the water level of the River and the Lake. The flood damage of 1963 was estimated at \$800,000 to \$1,000,000. The Territorial and Federal Governments compensated the loss to private individuals, and immediately started planning the new town. 'Indian Village' is 15-20 feet above river level, just above the level of the spring floods. After the flood and the completion of the bridge to Vale Island a fill in the West Channel was removed, allowing the water to equalize between the two channels and thus reducing the flood threat for the 'Old Town'. Hay River is advancing in its struggle against the flood. Protection against the other natural enemy of the northern settlements — fire, is also well organized. There are voluntary firemen, and also a junior fire brigade.

Municipal Revenues and Assessments—Hay River

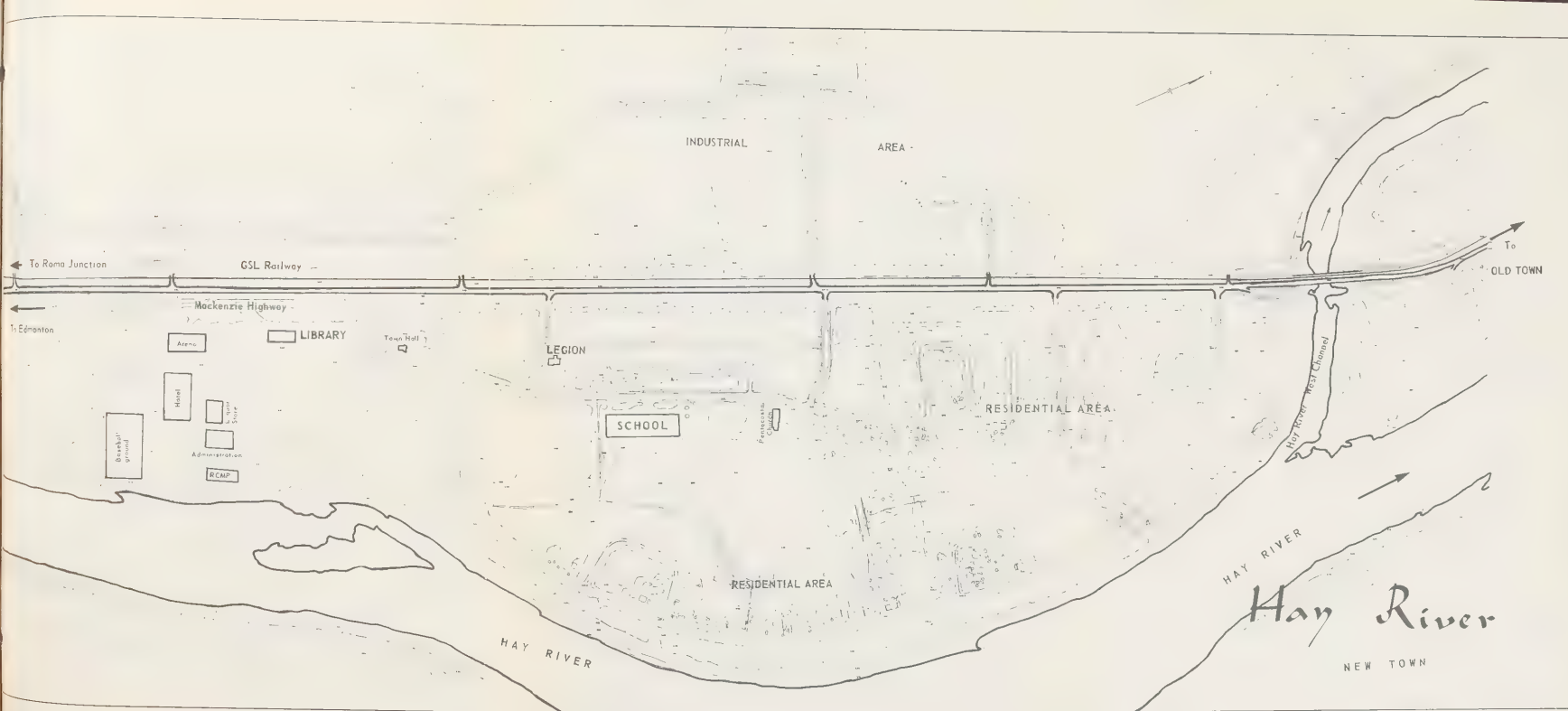
(A) SOURCE OF REVENUE

	1962	% of Revenue	1963	% of Revenue	1964	%	1966
Real property tax levy	30,273		36,141		36,207		64,831.26
Business tax levy	5,645		5,815		6,627		11,758.32
Poll tax	850		1,100		1,697		2,510.00
School tax:							
Federal							18,026.10
Separate							<u>2,270.28</u>
Licences and Permits	3,998		2,907		5,755		20,296.38
Miscellaneous	4,342		6,378		5,918		8,902.28
Less discounts allowed							9,346.25
Total Local Revenues	45,108	42.8%	52,341	41.3%	56,204	44.9%	2,591.28
Territorial Grants	45,741	43.4%	59,806	47.2%	46,105	36.8%	115,053.21
Federal Grant in lieu of taxes	14,508	13.8%	14,621	11.5%	22,730	18.3%	45,782.44
Total Government Grants		57.2%		58.7%		55.1%	16,500.36
Sale of equipment							345.00
Excess of expenditure over revenue							6,211.99
TOTAL RENEVUES	105,357		126,768		125,039		183,893.00

(B) REAL PROPERTY AND BUSINESS ASSESSMENTS,
HAY RIVER.

	1962	1963	1963 Additions to Property	1964	1964 Add. to Property	1965 & 1966	1965-6 Add. to Property
Taxable real property	946,030	1,112,940		1,131,480			
Crown exempt real property	487,770	577,940		754,470			
Other exempt real property	89,910	197,630		196,680			
Total real property assessment	1,523,710	1,888,510	364,800		193,920		249,446.05
Business Assessment	470,450	484,590		2,082,630		2,332,076.05	
GRAND TOTAL	1,994,160	2,373,100		552,240			
				2,634,870		2,884,316.05	

Source: Audited Financial Statements and Other Financial Information: Town of Hay River – Northwest Territories; Ernst & Ernst + IAND



The new town was built on the closest available site to the Old Town, but it is still several miles away. The "New Town" site is about double the height (twenty feet) above the water level of the Old Town and it is further away from the Lake, so that the threat of flood is practically zero. The flooding and resultant planning of the new town at Hay River occurred after the highway was built, but before the railway was extended to Hay River. If the relocation of the two had been effected at that time the New Town would not have been so awkwardly bisected. On the other hand there is a clear distinction between residential and industrial sites, which might be desirable. The length of the New Town is approximately two miles, while in width it has a maximum of 2,100 feet and a minimum of only 550 feet. It is a 'ribbon settlement' caused mostly by the configuration of the terrain. As residents of Vale Island move to the new town, the Indians from the Indian Village could be moved to the existing living facilities at Vale Island.

The New Town has three distinct parts. In the master urban plan, there is in each of the three a set minimum value of erected superstructures. That minimum in one section is \$4,000.00 in another \$7,000.00 and in the third \$12,000.00. It is of interest to note that the riverview lots are not the most expensive ones, but are middle-priced. The building of the new town will probably even more differentiate government and white collar people from the residents of the "Old Town", both socially and economically. Hay River has two main service industries — transportation and communication — the gross annual volume of which is estimated at \$25,000,000. The program of replacement of out-dated NTCL agency buildings and enlargement of the Hay River agency facilities, will be continued at a cost of some \$400,000.

In Hay River in 1967 there were several capital construction projects completed: library, railway extension, bridge, liquor store, community centre. More than \$1,500,000.00 was spent on a water and sewage system, and the liquor store cost was \$137,000.00.

During the centennial year the Northwest Territories chose as a Confederation Memorial Project a \$275,000 headquarters for the Regional Library System to be built at Hay River. For the library the Territorial Government contributed an additional \$50,000. The contract was let to Byrnes and Hall Construction Ltd. who commenced building in November 1966 and on February 22, 1968 the Library was officially opened. An Index of the books of the library is available in each Territorial settlement for borrowing.

There is a feeling that commercially and economically, Hay River did surge to the forefront of all settlements in the survey area, and that it definitely took the lead from Fort Smith. An indication of this is apparent in the local press. While Fort Smith at one time used to have a daily newspaper, which was later converted into a weekly, it now has none, while in the 'Hay River News' there is a Fort Smith feature.

Rocher River

The settlement of Rocher River is situated on the Taltson River at approximately 61° 23'N and 112° 46'W, a few miles south of the south shore of Great Slave Lake. The shore of the lake adjacent to Rocher River is shallow and the hydrographical chart is not precise in pointing the route to be followed to reach the settlement.

The Taltson River Delta begins at Rocher River and the settlement is built on both banks of the east channel without a connecting bridge. The river flows at about three miles per hour. The transparency of the water is about one foot and the value of the river as a source of water for human consumption is at best dubious. However, the quality probably does not differ from that of the water in the whole western part of the Lake, and the inhabitants have the satisfaction that at least the water in the River is not stationary. The Taltson River at Rocher River runs almost straight north. The buildings on both side face the River and therefore are oriented either toward the east or the west, avoiding the orientation toward north as the case would be were the settlement erected at the Lake. The River is navigable for canoes and fair size boats to Rat River about twenty miles to the south.

Break-up and freeze-up periods are very short, sometimes only one day, so that communication between the two parts of the settlement is uninterrupted. There is no landing strip but float and ski planes land on the river next to the settlement. Due to the shortness of the freeze-up and break-up periods, the settlement is open to the "outside" practically all year round.



On the right river bank are the store, church, community freezer, site of the former school building and some private buildings. On the left bank are the R.C.M.P. barracks and the majority of private dwellings including those occupied at present. On both banks of the river, there are good, mature stands of timber that were commercially exploited on a small scale. The size, thickness and amount of harvestable timber is inferior to that in the Slave River Delta. While the most conservative estimate of timber in the western part of the Slave River Delta is 18,000,000 FBM, the amount on the Taltson River is considerably smaller. The soil is alluvial and good and grows a variety of garden vegetables and a profusion of cultivated flowers.

There is radio-telephone connection directly with Hay River, which is usually open 8-10 AM and 7-8 PM. The reception is generally good.

A free trader founded a store in 1934 in Rocher River which now is the oldest free trade post in the Northwest Territories still in operation. For some time Rocher River had a Hudson's Bay Company Store as well. In 1959, at the suggestion of the Hudson's Bay Company Manager at that time, the Hudson's Bay store was closed and the manager's residence moved to Snowdrift.

The free trader enjoys a reputation for paying higher prices for fur than any other trader in the vicinity. Now, due to advanced age he is seriously considering retirement. Before retirement, he would like to find a prospective buyer but, at present, there is no one interested who is financially able to make the purchase. The store itself features a variety of dry goods and all the food-stuff that are usually found in the North, including eggs, a variety of meats, and garden vegetables grown in his own garden. The store and home burned down in 1960 and again in 1965. He recovered from both disasters and now occupies the old Hudson's Bay Company Store.

Early in 1960, the school burned down. This was the reason for the exodus of almost the whole population, mainly to the neighbouring settlement of Fort Resolution, which demonstrates the peoples' awareness of the importance of education for their children. In Rocher River on June 24, 1967 out of twenty-two houses, thirteen were vacant. Thirty-four people were living in the remaining nine houses. They ranged in age from less than a year up to seventy-five. Twelve were between the age of four and sixteen, that is either of school age now or in the immediate future.

Rocher River is closest to the boundary between the Precambrian Shield and the Alluvial Plain. This area has high hopes for non-renewable resources. At present, there are numerous prospecting parties working in the vicinity and there is also some diamond drilling. Immediately south of Rocher River, Carolin Mines Ltd. found a vein over two feet thick carrying zinc, lead and copper. This has no commercial interest but holds hopes for bigger finds.

At present, the only hope for the revitalization of the community would appear to be the rebuilding of the school.

Snowdrift

The corner stone of the community freezer in Snowdrift is engraved with the date September 14, 1955. That year signifies the beginning of permanency for the settlement and for its population. The permanency and the future development potential of the settlement is recognized administratively: The Snowdrift people used to belong to the Yellowknife "A" band, while there is now a separate "Snowdrift band". Snowdrift is almost exclusively an Indian community having only two white persons stationed permanently in it: The Hudson Bay store manager and the Catholic priest. During the school year there are two teachers that so far have changed every year.

The Hudson Bay store manager has a salary of \$4,500 per annum and fringe benefits that are equivalent in value to the monetary remuneration. These benefits consist of a furnished house with all utilities, food and the use of a boat and the fuel for it. The amount of food is practically unlimited and it consists not only of the food items that are regularly carried in the store, but also of fresh food specially ordered and delivered from outside. The position of this manager is typical for the Bay's managers in the area. They are well rewarded, and all the stores in the area are operating at profit.

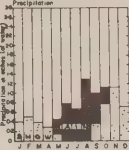
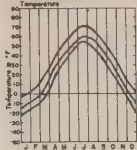


Boat and hydroplane dock at Snowdrift



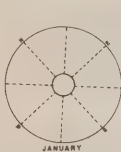
Snowdrift

WEATHER CONDITIONS



WIND FREQUENCY (—) Most frequent wind, figures in circle denote wind frequency

0 10 20 30 40 50
% FREQUENCY



JANUARY



APRIL



JULY



OCTOBER

Annual Mean Temperature is 19°F
Annual Precipitation is 9 inches



SNOWDRIFT

There are two Indians employed on a full time basis: an HBC assistant "clerk" and the school janitor. Another person is employed on a part time basis for the upkeep of the power plant and as a relief for the school janitor. The position of the "clerk" has higher social status and prestige in the village than that of the janitor, not only because of their respective personalities, but mainly because of the type of work they are performing. The local people in turn acquire some prestige by association with the clerk. The clerk himself has been steadily employed for many years and hopes some day to become the manager of the store.

In the summer of 1966 there was a guiding course held in Snowdrift by the Game Management Branch for the duration of one week. All participants had the course free and were even paid \$30 a person for attending it. It gave them qualifications to work as guides in all of the fishing lodges now in existence, and they are doing it well.

The Frontier Fishing Lodge is located only about a mile from the village and employs exclusively local help. The number of employees varies, depending on the number of guests, which at times reaches fifteen. Guides receive \$1.25 per hour, while the female help receives a dollar per hour. This income coupled with the usually generous tips and all the fish that they can consume, makes for fair seasonal earnings for the fifteen families. The Lodge has a capacity of 24 and a season of only 85 days, from June 18 to September 10, which means that there are 2,040 man-days in a season. The daily charge is \$60.00 with a theoretical maximum gross seasonal income for the Lodge of \$122,400. The Lodge is very popular with fishermen, and sometimes has heavier booking than it can handle, while at other times it is not used to capacity. Assuming a profit of about \$20.00 per man-day the seasonal profit is sufficient to justify the initial investment expenditures and to enable the owner to carry out further improvements and enlargements of the lodge.

Snowdrift has a tourist-visitor who since 1959 comes regularly from Livingstone, Montana, to avoid the crowd. He drives his car from his home-town pulling his boat all the way to Hay River a distance of some 1,500 miles. At Hay River he parks the car, and goes by boat via Fort Resolution to Snowdrift. Here, in Snowdrift he spends several weeks during the summer. This kind of tourism could and should be encouraged.

Thompson Landing

The hinterland of Thompson Landing at Mountain Indian Lake contains a lead-zinc ore body of about 1,000,000 tons. There are also more than a hundred quartz-copper claims in the vicinity of Thompson Landing. Expectations were much higher, which prompted the building of three oil tanks and several accommodation units. Taurcavis Mines Ltd. has a ten year lease on seven lots at Thompson Landing (No. 1,2,3,6,7,9 and 16) expiring in 1969, to reserve waterfront for ore shipment. The present stage of exploration indicates that the initial hopes were overoptimistic, so that the site is not at present in active use. However, the bulk oil storing facilities can prove useful in possible future developments, not only in the immediate vicinity of Thompson Landing, but also anywhere on the East Arm.



Oil tanks at Thompson Landing

THE ECONOMY

From the onset of this survey it was clear that it had to be dissimilar to the previous economic surveys. This survey had to be as much synthesis as it was an analysis. Analytical method only would not be sufficient to provide the complete picture of the complexity of the economic situation in the area. The economic situation in the survey area is very fluid and as complex as it is in some other more southern parts of Canada.

The economy of the survey area does not necessarily have to coincide or be identical with the economy of the Northwest Territories. In fact the survey area serves as a "metropolis" and has a central place function for the rest or a part of the Territories. In addition it is considered that the survey area, provides service coverage for residents of Fort Fitzgerald and Fort Chipewyan, in Northern Alberta, since these communities can be reached more easily from Fort Smith than from the south.

The survey area has 1/73 part of the Northwest Territories, 1/6 of the population and probably more than 1/2 of the economic activities. It is one that is integrated socio-economically to a higher degree within the total Canadian community than are other parts of the N.W.T. Economic climate in the survey area reflects the political stability of Canada; conditions are attractive for capital investment. Transportation, communication and hydro power as key factors in the development of the North country are all present.

Primary, secondary and tertiary industries are not in balance, but are probably somewhat better balanced than they are elsewhere in the Territories. Tertiary industry is developed out of proportion, primary industry is on the upswing, while secondary industry is still sorely lagging behind the other two. The non-goods producing sectors of the economy including government and the service industries represent a much larger proportion of the economic activity in the survey area than they do in the South.

It is estimated that the annual wage income in the survey area is \$2,700,000.00. The total earned income is considerably higher, than the WAGE income. In the survey area there is a number of salaried people, and also a number of commercial enterprise owners. There are no people in the survey area who are entirely oriented toward the aboriginal economy. Everybody has some cash income, either earned or non-earned. In 1966 Gross National Product (GNP) for Canada per capita was \$2,605. The wage earners in the survey area usually have an income that exceeds the average national income. Those that are not in permanent wage employment and depend partly or solely upon the harvesting of renewable resources have a cash income that is significantly below the national average. In that way we have two distinct groups according to earned income. To arrive at an annual income for the latter not only the value of country food should be computed, but also of firewood, articles of clothing (moccassins) and possibly some of the construction material (logs).

Monetary income is higher than the apparent living standard indicates, or in other words the living standard is lower than what the monetary income would support. The money is sometimes spent non-economically. This is probably the case with all low-income groups, and is not confined to the survey area only. A tradition that a temporary feeling of well-being is more important than long-range planning or future security is widely prevalent.

In the area there are 157 commercial enterprises (APPENDIX VIII) employing about 920 people; the total capital assets of these enterprises were valued at \$70,000,000. The total number of people employed in both the commercial and non-commercial sector number approximately 1,300. The potential labour force is about 1,650 or 350 more than employed at present. Many people employed are not working 12 months, but work one or two seasons a year for a total duration of 3-6 months.

The cost of a commercial operation in the survey area is higher than elsewhere due to the high cost of:

- Transportation
- utilities (heating, electricity, water)
- insurance
- employees' mobility

That increased cost is offset somewhat by the lower or on par cost of:

- wages
- rent
- telecommunication (telephone, telegraph)
- advertising
- garbage disposal

For the further development of the North, human and natural resources are becoming less and less sufficient by themselves particularly in this area which already has some large scale operations. Capital resources are required for any larger project, and easier access to them is the greatest need. US and Japanese capital is starting to make its way into the survey area, although very timidly at present. There is American capital in some tourist lodges on the Lake, and a small percentage of American and Japanese capital in Pine Point. The survey area has to compete for the investment of foreign capital with the other developing countries of the world and it should be made as attractive as possible.

Capital flows North, while income earned in the survey area by migrants largely leaves the North, either at the same time as migrants do, or even before them. So, there is northward migration of people and southward migration of their surplus earned income. By establishing more banks, credit unions and other financial institutions this trend might be partially arrested. At present there are branches of the Bank of Montreal in Pine Point, of the Canadian Imperial Bank of Commerce in Fort Smith, and of the Royal Bank of Canada in Hay River. There are no Credit Unions. The survey area has three out of the five banks in the Northwest Territories. In Hay River there are also two chartered accountants.

In the field of labour the paradoxical situation develops that unskilled labourers are imported from the South, when a local pool is available. If the goal of industry is to reduce turnover, then hiring of the local people should achieve that. Local workers would stay longer than those from the South once they fully accept southern attitudes towards work. The terms "employed" or "unemployed" are irrelevant to someone who is conditioned to a largely non-monetary subsistence economy.

At present the only Canada Manpower Centre in the Northwest Territories exists in Hay River, while Fort Smith is in the process of forming one. Closely related to the Canada Manpower Center (CMC) is the Unemployment Insurance Commission (UIC). In Hay River and Fort Smith, CMC has its share of inquiries, and there is some filing of claims with the UIC. There is a correlation between extroversion and obtaining a job – particularly if the job is by its nature short lived and contact with the prospective employers has to take place repeatedly. Indians are by their nature more introverted than whites, and particularly so in dealing with whites. Sometimes they do not seek a job not because they are inert, but because of initial difficulties in the job interview or in filling out the forms. If the person charged with hiring the employees is known not to be sympathetic towards Indians, then the reluctance for even applying for employment is magnified.

Employers and administrators in the survey area recognize the big gap that exists between the subsistence, non-monetary economy and a disciplined wage economy with strictly set working hours and regularity of working days. In order to help the people in the transitional period "Job Acclimatization" is attempted. In essence, it means that native employees, are initially granted greater flexibility in their work attendance. When the people realize that they have to sacrifice some of their 'freedom' for the material rewards of work, they may better acclimatize to the job without pressure. On government construction at the Hay River airport there is a number of jobs open for those who wish to come and go as they please. The town foreman in Fort Smith is experimenting with this approach and is well liked by the people who are inclined to stop working when they feel like it. Thebacha ('below the rapids' – Chipewyan name for Fort Smith), an Indian-Metis Association is already doing what is being projected for Hay River: one man is responsible for supplying a definite number of men for the large work projects. He is successful in getting the required number of workers to be on the job each day, although they may not be the same people.

Due to the seasonal slackening of economic activity in Canada the 'Winter Works Incentive Program' was instituted. In the survey area it is felt that the winter work program should not be restricted to winter or to any particular season, but should operate year around or at the season when the special incentive is required in that particular geographical location.

Three crown corporations operate within the survey area. These crown corporations are either an 'Agency Corporation' or a 'Proprietary Corporation'. An AGENCY Corporation is "a Crown Corporation that is an agent of Her Majesty in Right of Canada and is responsible for the management of trading or service operations on a quasi-commercial basis or for the management, of procurement, construction or disposal activities on behalf of Her Majesty in Right of Canada". Such is the Northern Canada Power Commission (NCPC) discussed elsewhere in this report.



A familiar sign in the North – 'Hudson's Bay Company incorporated 2nd May 1670'

A PROPRIETARY Corporation is a Crown Corporation that:

"1) is responsible for the management of lending or financial operations, or for the management of commercial or industrial operations involving the production of or dealing in goods and the supplying of services to the public, and

2) is ordinarily required to conduct its operations without parliamentary appropriations." Such are the Northern Transportation Company Limited (NTCL) and the Great Slave Lake Railway (GSLR), both discussed under the heading of 'Transportation'. Prior to 1952, Crown Corporations did not pay corporate income taxes. After January 1, 1952 proprietary Crown corporation paid taxes on income earned in the same manner as any privately owned corporation.

The first significant contact with Whites for the people in the survey area was with white traders, mostly of the "Governor and Company of Adventurers of England Trading into Hudson's Bay" or, "Hudson's Bay Company". In the North there is a very popular translation of HBC as "Here Before Christ". The HBC is still very active in the survey area, having four stores in four settlements (Fort Smith, Hay River, Fort Resolution, Snowdrift). Beside the strictly commercial aspect of its activity, the Bay on occasion performs some community services, such as running the Post Office in Snowdrift.

NON-RENEWABLE RESOURCES: PINE POINT

INTRODUCTION-PERSPECTIVE

During 1966, there were seven producing mines in the Northwest Territories and three in the Yukon. The value of mineral production of all ten operating mines was \$122,986,524. Pine Point accounted for almost \$100,000,000 of this. Pine Point lead and zinc replaced gold as the leading metal in the value of mineral production in the Northwest Territories when the Pine Point open pit came into production in November of 1964. The Pine Point operation alone increased the net value of production for the Territories by a conservatively estimated 75 per cent. The value of the production of the Pine Point mine not only far exceeds the combined production of all the other mines in the Northwest Territories, it exceeds that level by about 500 per cent. The output of both lead and zinc from Pine Point amounts to about 20 per cent of the Canadian output of these metals or over 2 per cent of the world's production. While foreign capital (American, Japanese) predominates in some northern mines, Canadian capital predominates in the Pine Point development. In the Yukon and Northwest Territories all natural resources are owned by the Crown and are administered by the Federal Government. Resources are never sold outright, but are leased for limited periods of time.

EXPLORATION

A previous theory as to the origin of the minerals has been discredited with the finding of the Pyramid orebody, which was outside the Presqu'île reef area and in which the ore placement was different from the other orebodies in the area. A relationship exists between the Pine Point orebodies and the projected extension of the major Precambrian fault system (McDonald) on the East Arm of Great Slave Lake.

Due to lack of outcrops and the large amount of overburden in cap rock, exploration was conducted in three stages: Induced Polarization (IP) survey; mapping and identification of anomalies and finally diamond drilling.

Exploration continued on Pine Point property during 1966 and seven new claims were staked. Including those acquired by purchase from Pyramid Mining Co. Ltd. this makes a total of 2,306 claims owned by the Company at year end. Geophysical work was continued and at the end of 1966, sixty per cent of the property had been covered by Induced Polarization surveys. A number of new anomalies were located during the year, many of which still require investigation by diamond drilling.



Trailer – living quarters for prospectors upstream on the Little Buffalo River

Sulphur has been known to be present in the area for upwards of hundred years. However, most showings have been small and regarded as not of economic importance. There is a topographical name, "Sulphur Point", on the lake north-west of Pine Point. At the west side of the Pine Point property, which is formed by the Buffalo River, sulphur has been intersected in some of the drill holes. West of the Buffalo River, gas was intersected last winter during exploration drilling. It burned for approximately two weeks before the government required that the hole be capped. The gas is considered to be just a very small pocket and may not be of economical interest, though it may be similar to the deposits in southern Ontario. It was intersected at a depth of about 600 feet. Gas and oil possibilities are thought to be mainly associated with the shales that run out under the Lake but do not extend inland as far as the Presqu'île formation in the area of the orebody.

In the summer of 1967 there were five diamond drilling crews in the area which completed about 125,000 feet of diamond drilling. IP has been used to find most of the orebodies to date. It is effective on mineralized areas containing galena (lead sulphide), but it is not effective on sphalerite (zinc sulphide). IP appears to be most effective in this area on galena located at about 200 feet depth with a possible effectiveness up to 600 feet. At the greater depth IP is affected by many extraneous conditions. An example of this problem is that although the Presqu'île formation, which is the ore formation, is only 400 feet deep at the Buffalo River and dips to the Southwest at only 20 feet per mile, no ore has been found in any of the anomalies west of the river. Pine Point controls almost all the land east of Buffalo River with the exception of small areas held by Coronet, Conwest, and Pyramid (which is now Pine Point).

During the winter of 1966-67 some drilling was carried on in the lake close to Hay River. This was mainly for geological information and there was no exploration for oil or ores.

RESERVES

The two ores present at Pine Point are zinc sulphide or sphalerite and lead sulphide or galena. Ore reserves at year end 1966 were 37,800,000 tons averaging 2.9 per cent lead and 6.8 per cent zinc. This represents an increase in reserves of some 16,000,000 tons as compared with the figure reported at the end of 1965. A substantial part of this increase was due to the acquisition of the former Pyramid claims. Metal content was 1,100,000 tons of lead and 2,570,000 tons of zinc.

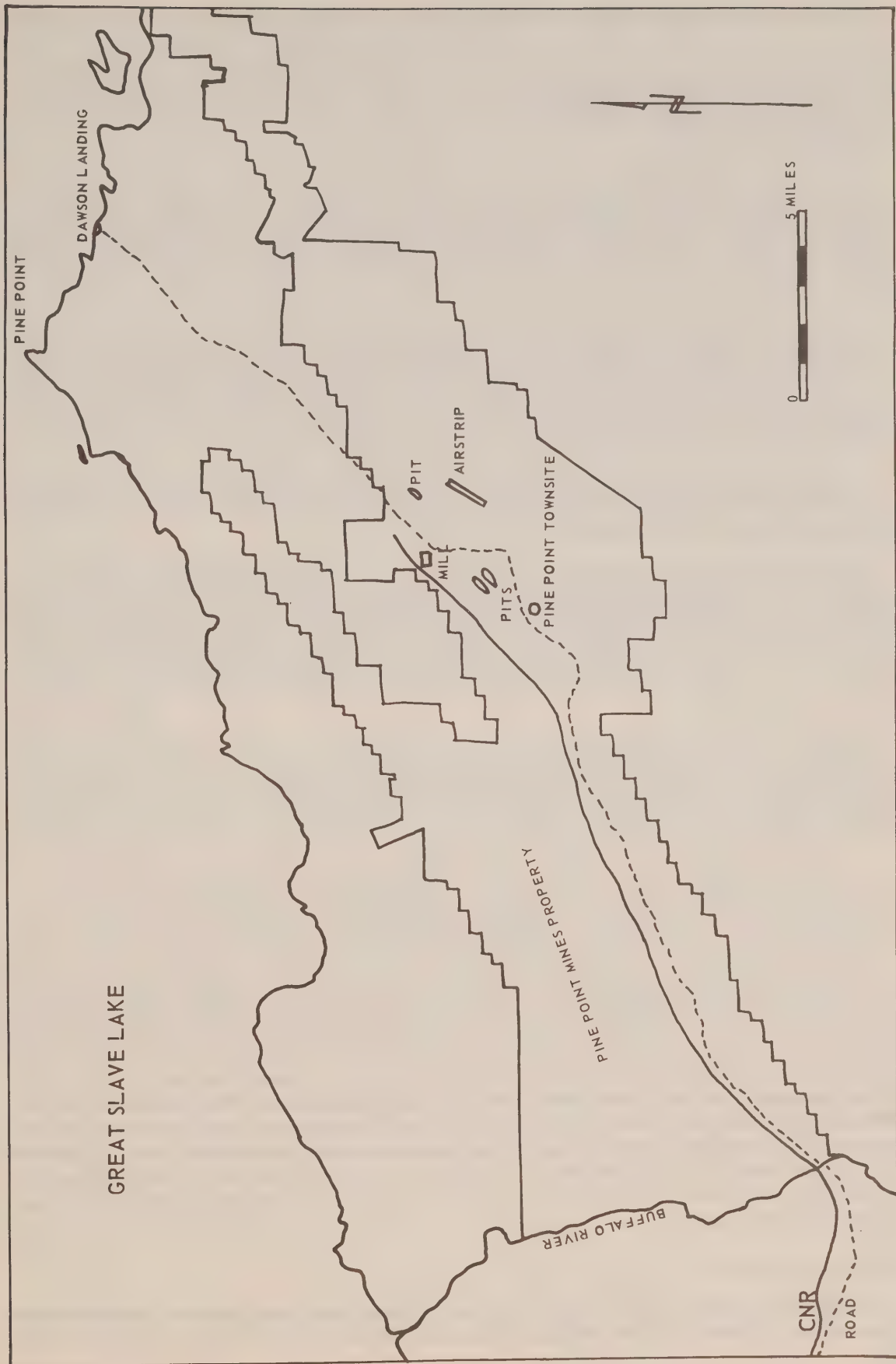
Engineers and geologists give an ore potential for Pine Point of 120,000,000 tons. This compares with 37,000,000 tons proven and an additional 100,000,000 tons probable at Ross River, Yukon. Ross River, besides Pb and Zn, contains other "complicating minerals" such as copper. In Pine Point all other metals, are absent even Ag which is usually associated with Pb and Zn ores making flotation and separation relatively simple and inexpensive.

INVESTMENTS AND ASSETS

Net capital expenditures for the year 1966 amounted to \$27.8 million, including \$26.3 million which was the valuation of 526,400 treasury shares of the Company issued on June 3, 1966 to Pyramid Mining Company Limited to acquire certain properties in the Northwest Territories. The purchase comprised outright ownership of 408 mineral claims containing two orebodies, estimated at the time of purchase to contain approximately 11 million tons of ore grading 2.5 per cent lead and 8.0 per cent zinc, and an option on an additional 39 claims. All of the claims are adjacent to or nearby the south boundary of the Pine Point original property. On December 31, 1966, working capital amounted to \$11,844,000, an increase of \$2,259,000 during the year. Under the Income Tax Act and the Canada Mining Regulations, the income from the operation of the Pine Point Mine on the original property is exempt from tax until March 1, 1968, the end of the three year tax free period.

Capital expenditures other than for the acquisition of Pyramid were relatively small during the year. A start was made on extending the loading shed, for added protection in sub-zero weather, and a fourth 5-yard diesel power shovel was purchased as well as trucks and other ancillary equipment.

Fixed Assets	1965	1966
Buildings and equipment less depreciation	17,542,000	16,789,000
Mining property and development	3,400,000	29,548,000
TOTAL	20,942,000	46,337,000



Cost of the mine-mill complex is \$46,000,000, but the railway and power projects will push the overall cost of this big undertaking to about \$128,000,000. Depreciation is being provided for, on a straight-line basis to absorb the cost of the mill and the original mining properties over ten years from January 1, 1965. The proven reserves even at increased capacity will last much longer than ten years, and the possible reserves may extend even further.

ADJOINING PROPERTIES

By far the greatest activity in the continuing search for lead-zinc orebodies in the Pine Point area to date occurred in 1966. After completion of the Great Slave Lake Railway into Hay River and Pine Point a number of mining and exploration companies acquired ground adjacent to Pine Point Mines. Several companies embarked on geophysical exploration programs followed by diamond drilling of the anomalous area.

The most successful of these was Pyramid Mines Limited which in October 1965, obtained an important and encouraging ore intersection on its property adjoining Pine Points Mines. This precipitated the heaviest staking rush in the history of mining in the Northwest Territories. From October 1965 to September 1966, some 30,000 mineral claims were staked and recorded in this area. Pyramid continued its drilling program on three anomalies and outlined some \$30,000,000 in lead-zinc ore.

More than 100 companies acquired claims in this field and all have conducted or are preparing to conduct IP surveys and diamond drilling programs on their claims. Many have completed such programs without much success, others have already outlined mineralized zones.

Newconex – Conwest Exploration and Coronet Mines have combined in a joint development program of their Pine Point deposits. It is reported that approximately 1,250,000 tons of ore have been outlined averaging thirteen per cent in combined lead-zinc with excellent possibilities of developing larger tonnages. The construction of a mill is being considered. If more than one company becomes engaged in milling in the Pine Point area it would change the picture entirely: town, transportation, "company town" image, labour mobility, competition, etc.

There are eleven other properties that have anomalies and which carried out drilling in 1967. These include Copper Soo Mining Company Ltd; Canex Exploration Ltd; Quatsino Copper-Gold Mines and New Privateer Mines; Louanna Gold Mines; Great Basin Metal Mines Ltd; Cominco on Amalgamated Resources property; Buffalo Lake Mines Ltd; Pine Ridge Mines Ltd.; Pinex Mines Ltd. and Five Star Petroleum.

Many other companies have not yet reached the drilling stage, but are planning geophysical programs on their properties. The fact that very few claims have lapsed in the first year and that those that have, have been quickly restaked give an indication that the area is considered very favourable.

In 1965 Rayrock Mines conducted an IP survey followed by diamond drilling at Sulphur Bay on the west shore of Great Slave Lake north of Pine Point. Minor amounts of lead and zinc mineralization were encountered. First Northern Exploration Company optioned a showing on Thubun Lake to Rollinghill Copper Mines Ltd. which conducted an IP survey and completed 4,000 feet of diamond drilling in five holes. Some mineralization was encountered. This property is south of Great Slave Lake and east of Pine Point. In the same area, at O'Connor Lake, a lead deposit on which American Yellowknife sank a prospect shaft, has been restaked. On the East Arm of the Great Slave Lake, Nahanni Mines Ltd. has been conducting IP surveys and some diamond drilling on copper showings at Meridian Lake and at Murkey Channel. Spectroair Ltd., a company formed to search for minerals in the Northwest Territories, has been conducting airborne scintillometer surveys in the East Arm of Great Slave Lake and the Nonacho Lake areas searching for uranium.

OPERATION – MINE

The mine is one of the easiest and most straight-forward open pit operations. The pits are very shallow, there is almost no water problem; the ore is easy to drill and blast, there is no permafrost; the

stripping ratio is very low. The weather is no worse (even better) than that in the mining towns in the Labrador Peninsula, mining cost should be well below \$1.50 per ton to bring out the ore.

Production is presently 8,000 tons a day, or more than 2,000,000 tons per year. There are many orebodies (26), generally they are outlined and are about 1,000 feet long by 400 to 500 feet wide and 100 to 125 feet thick. They are varying in size from 100,000 to about 5,000,000 tons. The ex-Pyramid Mine has 12,000,000 tons. This is the next orebody that will be opened up. There are presently three orebodies being mined. The ore is mined with open pit mining methods, using 30 ton Euclid trucks, a four yard diesel shovel and a caterpillar tractor for clean-up. 30R and 40R Rotary drills are used for blast hole drilling and for pre-sheering the walls. These two types of drills are adequate to keep all three pits drilled ahead of production requirements. The Company will be using much larger equipment when they operate the Pyramid pit. They have purchased an eight yard electric shovel. This requires the installation of a considerable amount of heavy electric cables and lines to the X-15 mine (ex-Pyramid) area. Unfortunately, the 50 ton Euclid trucks are too large to be used for carrying the ore. They are not able to back up into the crusher house. It was not decided whether the doorways to the crusher house would be enlarged, but purchase of such large trucks would indicate that most likely they will be. The mine has Euclid trucks of 35-50 ton capacity, but due to the specific gravity of the ore there are 10 more tons in each load. Stripping is not excessive — about .4 tons of waste for each ton of ore. The specific gravity of waste is less than the ore and conversely the volume is bigger than the ratio indicates. For stripping, the 50 tons Euclid trucks are used and in that way the number of trip balances out, compared with the 35 ton trucks. In 1966 stripping of the property continued, a total of 1,494,987 tons of overburden and waste rock being stripped during the year.

The number of people engaged in actual mining is small. Without supporting crew a cycle requires only three men: driller (with the highly mechanized and sophisticated equipment, sitting in a cabin heated in winter and “pushing buttons”), loader (operating a six yard³ diesel shovel which may be replaced by the 8 yard³ electric one) and truck driver. Of course there are several truck drivers, bulldozer operators for gathering the ore for the shovel operator, foreman, blast hole loader, blasters, etc.

OPERATION-MILL

The whole process at the Pine Point mill is controlled by delicate electronic instruments equipped with automatic graphing and recording devices. The operators need only keep gauges at pre-selected levels. While mining and milling are simple and straightforward, the maintenance department is the key to efficient operation. Milling practices are very simple. The ore is coarse, friable, easy to grind, easy to separate and has no complicating minerals. The mill crew totals 48, for seven day a week-24 hours a day operation.

Last year the concentrator treated 1,457,990 tons of ore averaging 4.9 per cent lead and 10.5 per cent zinc. Production amounted to 79,474 tons of lead concentrate and 241,005 tons of zinc concentrate. Approximately 51 per cent of sales of concentrates were made in Canada, chiefly to Cominco, 31 per cent were made in Japan, chiefly to Mitsubishi-Cominco and 4 per cent in Europe. The mill can be expanded to increase the present capacity of 8,000 tons a day. The crusher house is already able to handle even more than 10,000 tons a day. Concentrate production has already been increased to 400,000 tons per year, 8,000 per day, with a metal content of 100,000 tons of lead and 150,000 tons of zinc.

The mill was closed for two weeks in summer of 1967, in order to reduce the inventory of zinc at Trail, and to enlarge the mill. The zinc market in the summer of 1967 was not very active. The mines were not closed however; stripping and development work were carried on as well as shipping of high grade concentrate to Trail.

Mining, milling, administrative cost per ton	\$ 4
Freight	30
TOTAL	\$34

Freight amounted to approximately 1.26 cents per ton-mile for the Pine Point concentrate for the 1,400 mile Pine Point-Trail haul.

SERVICES, HYDRO, TRANSPORT

Pine Point Mines Ltd. has an agreement with CNR to ship 215,000 tons of concentrates per year for a period of 10 years in order to defray part of the cost of the construction of the Great Slave Lake Railway. In the summer of 1967 the mine was producing enough concentrate to send out two trains per week at ninety cars per train, and ninety tons per car or approximately 8,000 tons per train or 16,000 tons of concentrate per week. About 25 per cent of the ore mined is shipped out as high grade ore. This averages about 50 per cent metallic content and is shipped directly to Trail where it is mixed with ore from Trail.

Present shipping tonnages are in excess of those stipulated in the agreement and so are payments of the Company to the CNR. In 1966, 79,474 tons of lead concentrate and 241,005 tons of zinc concentrate were produced for a total of 320,479 tons. In addition high grade ore shipments in 1966 amounted to 282,309 tons for a grand total of 602,788 tons. At present high grade unmilled ore is being shipped out at the rate of about 350,000 tons per annum. With the depletion of present high-grade orebodies this may diminish or cease.

Pine Point has a daily requirement of 5,000,000 gallons of water which is 50 per cent of the total industrial use in the Territories.

Electric power in Fort Smith and Pine Point is the cheapest in the Territories, apart from places where power is free. Taltson, with an amortization period of 40 years permits the delivery of power to Pine Point at a rate that initially is competitive with thermal generation at the mine, and with increased demand the cost would be even less. At present power is being supplied to Pine Point at a rate of 13 mills per kwh (11 mills after enlarging the concentrator.) The town and the mine have no subsidiary source of electrical power and the Taltson plant usually shuts down by arrangement with the company. When the power is interrupted unexpectedly the mill has to be shut down.

LABOUR, EMPLOYMENT, SAFETY

The company has 215 men on the general roll and 55 people on staff. All staff except four men are married and are living in houses in the townsite. These four men live in a house which has been turned into a staff house. Some of the general roll men also live in the townsite, most of them, though, in the bunk-houses. About 25 per cent of the men in the bunk-houses are married. The company states that about 15 per cent of the men on the general roll are natives of the Territories. There is an agreement with Pine Point Mines according to which eventually 25% of the labour force is to be from the native population.

The living conditions in the bunk-houses for single men, or married men away from their wives, are on a par with other mines. If the number of houses could be increased and bunkhouse conditions improved, turnover would likely be reduced. With the present social and living conditions in the town, one would not expect even people from other northern settlements to stay working at the minesite very long. The people coming from the outside are usually career people, or those interested in making a good stake before getting out, and therefore willing to put up with inconveniences. People coming in from other places in the North have ordinarily no such desire for large amounts of money and they are not willing to put up with poor and austere living conditions. The only place where there are Territorial people employed is the mining operation itself. This is strictly heavy equipment work, the same as on road construction. There are no Territorial people in the maintenance department, and there are no Territorial people in the mill. The mill offers considerable scope for native employment. There is no previous training needed; the company would rather train their own people. The qualification would be about grade 10 or grade 11 education. After this the person would come in and work his way up and since there is a high turnover in the mill itself there would be no difficulty for a person of average intelligence to work himself into a well paying job within about eight months or less. The company puts little value on the training of people in vocational schools at high school level. They feel that this is far too early and the people would be better off to take more science courses before any vocational training is started. The company though has some apprenticeship programs which depend entirely on the number of journeymen they have presently in the maintenance department. The number of journeymen at present is low, although Pine Point has more trade journeymen

than all the six remaining mines in the Northwest Territories together. In most cases the company would rather have company-trained employees than school trained employees.

Pine Point employs approximately 270 men out of a total of 1,000 in the mining industry in the Northwest Territories. The opening of the new pit and the increased production has very little effect on employment figures. The mill itself is to employ two or three more men than previously for an increase of 3,000 tons per day, and there would be about ten more men in the mining operation.

Pine Point Mines averages a labour turnover in the vicinity of 150-160 per cent per annum. Pine Point Mines has a smaller turnover than Giant Yellowknife Mines which had a turnover in 1967 of 185 per cent. The underground operation at Giant Yellowknife Mines had a turnover of 289 per cent in 1967. Pine Point has no underground operations, and, therefore, cannot be compared to the mines that have. However, the turnover in the Pine Point Mines pits is almost on a par with other segments of the mining industry.

There is only a small number of cars in Pine Point although Pine Point is open to the net of highways outside. The company pays for transportation from the recruiting point (usually Edmonton for labour, and Trail-Kimberley for the managerial and professional staff) which discourages bringing cars. If more people were encouraged to bring their cars, turnover might be reduced.

Wages are either similar to, or exceed the wages in the other Cominco operations. A detailed list follows with all the wages for the jobs that are current.

CLASSIFICATIONS			Base Rates Per Hour Effective July 1, 1967
Surface and Mining	Maintenance	Mill	
Casual Labour (Hired for less than 6 months)			2.58
Labourer	Labourer	Labourer	
Shovel Oiler—3		Mill Helper	2.66
		Crusher Helper	
		Mill Helper (water treatment)	
Surveyor's Helper	Trades Helper	Loading Shed	2.74
	Warehouse Floorman	Helper	
Drill Helper	Repairman—2	Operator—3	2.90
Truck Driver	Painter 2nd Cl.		
Bus Driver			
Shovel Oiler—2			
Scaleman			
Engineer Assistant			
Driller (open pit)		Operator—2	2.98
Blast Hole Loader			
Payloader Operator (less than 3 yards)			
Scaler			3.065
Diamond Driller			
Airtrac Driller			
Payloader Operator (3 yards and over)			
	Steam Engineer 4th Cl.		3.08

CLASSIFICATIONS			Base Rates Per Hour Effective July 1, 1967
Surface and Mining	Maintenance	Mill	
Shovel Oiler—1	Powerhouse	Operator—1	3.155
Euclid Truck Driver	Operator		
Grader Operator	Repairman—1		
Bulldozer Operator (less than D-9)			
Rotary Driller (to 5")	Mechanic—1		3.245
Mobile Crane Operator	Pipefitter—1		
	Carpenter—1		
	Welder—1		
	Blacksmith—1		
Blaster	Machinist—1	Flotation Operator	3.335
Rotary Driller (over 5")	Electrician—1		
	Instrument		
	Mechanic—1		
	Steam Engineer		3.435
	—3rd Cl.		
	Painter—1st Cl.		
	Journeyman		3.60
	Tradesman		
Shovel Operator			3.605
	Instrument		3.75
	Mechanic		
	Steam Engineer		
	—2nd Cl.		

(compare these wages with appendix IV)

The minimum wage for casual labour hired for less than six months is \$2.58 per hour. The maximum wage in the mill goes to the flotation operator — \$3.335, while the maximum in surface and mining is set for a shovel operator — \$ 3.605. However the top wage is that of maintenance or instrument mechanic and steam engineer, second class, — \$ 3.75. The difference between the minimum and the top wage is \$ 1.17. The present contract expires on August 31, 1968, at which time the wages will probably undergo some revision.

If an employee is going "outside" for a vacation the company may contribute up to 60 per cent of his transportation cost.

Seniority starts accruing after 90 days.

One way transportation is paid after 150 shifts.

Return transportation is paid after 250 shifts.

The probation period is six months. It is just a little short of the time limit when one way transportation (back to the recruiting point) has to be paid by the company.

There is a plan, subsidized by Cominco, in effect at Pine Point for protection against medical expenses. The company Life Assurance Scheme insures employees for double the amount of their annual income.

Pine Point has a comparatively good safety record. There were no fatalities in 1965. On August 2, 1966, a bulldozer operator was killed when the bulldozer he was operating went over the pit wall at Pine Point Mines and crushed him.

Causes of disabling accidents in Pine Point Mines

	1965	1966
Strain while lifting	1	3
Fall of rock	1	
Hit by objects	1	6
Struck by moving object		2
Foreign body in eye	1	
Caught in machinery		1
Fall of persons	1	3
Burns		1
Cuts	1	
Miscellaneous	1	1
	<hr/> 7	<hr/> 17

Mining accident FREQUENCIES for Pine Point Mines

	Number of man-hours worked	Compensable accidents Number of accidents	Accident frequency	Total disabling accidents Number of accidents	Accident frequency
1964			21.1		26.4
1965	311,226	5	16	7	22.4
1966	579,004	14	26.4	17	29.3

Concerning the number of accidents in percentage of the man-hours worked and the accident frequency Pine Point mines record is more favourable than the Northwest Territories average.

Mining accident SEVERITIES for Pine Point Mines

	Compensable accidents Number of days lost	Accident severity	Total disabling accidents Number of days lost	Accident severity
1964		601		612
1965	235	735	235	755
1966	6,371	11,003	6,371	11,003

In 1966 all compensation accidents were disabling accidents.

Accident severity in 1964 and 1965 was lower than the Northwest Territories average, while in 1966 it was higher than the Northwest Territories average.

TOWNSITE

The town plan for Pine Point had to provide initial accommodation for 1,000 residents and an ultimate population of about 2,000. That such a plan was quickly created in spite of the technical, financial and administrative problems is a tribute to the co-operation between the Company, the planning services of Central Mortgage and Housing Corporation (CMHC) and of the Territorial and Federal Governments. Pine Point is a modern community with no substandard housing, is fully serviced, and has no incomes below \$5,000. All housing is either company or government owned or controlled (14 units NHA financed, privately owned and leased to government).

In Pine Point the mine and the townsite were built almost simultaneously. While the mine operates at full capacity and even increased that capacity, housing is still being built, and the supply at the moment almost balances the demand. All the houses meet the most rigid standards of any Canadian community, either north or south and some of these houses are likely better than the housing which the workers occupied in their hometowns prior to being hired by the company.

One half of the proposed settlement is already constructed, and the other half will be started very soon, most likely during the 1968 construction season. The first half is completely built up, using all the available lots. The houses are of different design, size and, most important, of different outside colours. Yet, they give the impression of being a suburban development by a single building firm that is attempting to introduce some variety, while preserving overall "equality". It might have been better to have had a few lots vacant that would break the monotony, where a private builder could unleash his imagination for the creation of entirely different designs and in that way contribute to the dynamics of the architectural design. The mass-produced houses in that way would not lose anything; on the contrary, they would gain by the contrast with their placidity and calmness of line.

In Pine Point there are reserved sites on the master plan for three churches: Roman Catholic, Anglican and Nazarene. None of them has enough money to erect a church by itself, nor has the combination of any two. If all three pooled their resources there would be enough capital to complete one building. The three churches would use the church building alternatively. But, besides the church itself, the other rooms could and probably would be used for other purposes. As this is against the principles of one of the three denominations, such a three-way pooling of resources did not materialize.

The construction of houses this summer was carried out by Keith Construction of Calgary. The houses were semi-prefabricated the previous winter and the joists were pre-cut and nailed together before being shipped in, facilitating very quick assembly of the houses on site. The Northern Administration Branch supplies the services and clears the housing sites for construction. After this the lots are sold, in this case to the company and the company has the houses built. Besides twelve new houses built during the summer of 1966, there were also six new trailers brought in. At present, there are 111 houses in the town, most occupied; seven are owned by the government, the rest are owned by the company. The capacity of the company-owned bunkhouses was doubled early in the summer of 1967. The rooms are approximately 9 x 12 for two men and contain a single cot for each man, plus a cupboard at the foot of each bed. In addition there is one small table which must be shared. If occupancy were reduced to one man per room and the men were allowed to decorate and add to their rooms, living conditions could be improved greatly.

Employees pay approximately \$100 per month for renting an unfurnished house including utilities. This compares with approximately \$120 for a furnished house with utilities for government employees.

The completion of a hotel and shopping centre was in progress during the summer of 1967. There is room for nine stores in the shopping centre which faces the hotel. At the time of the survey the Post Office, the R.C.M.P. and the Northern Administration Branch area office, were the only agencies in the shopping centre. The rest of the centre was not completed due to lack of funds, but it also appeared that the owners of the shopping centre were having difficulties in finding people to come in to take over the stores. It was even difficult to get anyone to come in with a grocery store to supply the town. Cal-Van caterers were operating a small store for the company, but it was understood that they were reluctant to open a large store in the shopping centre, as were the H.B.C. and the IGA. Women rotate trips to Hay River possibly once a week, and people go to Fort Smith as well to do their shopping because they find the Hudson's Bay Company store at Fort Smith has by far the largest selection of goods in the area.

The hotel was more or less finished in May and was opened at that time. It contains a dining room, a restaurant, a beer parlour and a lounge, as well as the rooms. The restaurant operation is contracted to a Chinese firm from Edmonton which brings in its own labour and help. Since no extra private accommodation exists in town all restaurant employees live in hotel rooms. The lounge is operated directly by the hotel. All personnel in the hotel except the manager and his wife had changed between the time the hotel was opened and the first of September. This was also the case with the restaurant. The Bank of

Montreal presently has a branch upstairs in the recreation centre. In the summer or autumn of 1968 it was supposed to commence the construction of a bank building of its own.

To prevent the movement of squatters into the Pine Point area all land around the townsite is controlled within a fifteen mile radius of its centre. Construction within the townsite itself is required to meet CMHC standards, but provision is made for a trailer park adjacent to the townsite. The demand for residential lots has hastened the installation of water and sewer services in the easterly half of Pine Point, so that additional lots can be made available. Cominco provides free soil for the Pine Point gardens.

At present the government is responsible for the services in the town: this includes water, sewage, garbage, power. Pine Point Mines Ltd. now looks after these services on a contract basis. In the future the government intends to provide them itself.

It is the stated aim of the government that private individuals should operate in the town and have private housing. The price of house lots in Pine Point are comparatively high so that it is unlikely that many people will buy or build houses. Residential lots in Pine Point are \$2,200. This is almost three times as much as the same size lot in Hay River. As it is, house construction is expensive. The old town is mostly deserted, although the quality of housing even there would be considered to be above the average.

The present setting of the town is close to the mine operations and yet the Lake is close by providing a useful recreational outlet. Pine Point has four recreational outlets each different from the other and each with its distinctive features: Dawson Landing, Hay River, Fort Smith and Wood Buffalo National Park. The presence of people in Pine Point not employed by the mine, would help to diversity the economic and social base of the town and aid the government's plan to create a self-governed municipality. The area administrator stated that he hopes Pine Point would achieve municipal status by January 1968. Half of the town council would be appointed by the Commissioner and half would be elected.

SALES, DIVIDENDS

Sales of concentrate either to Cominco itself or to Mitsubishi-Cominco amounted to 65 per cent of output, so that the biggest volume of transaction the Company had, was with itself. High grade ore shipments continued throughout 1966; a total of 282,309 tons averaging 18.8 per cent lead and 26.3 per cent zinc were shipped to Cominco at Kimberley and Trail, and to the Kellogg, Idaho, plant of Bunker Hill. Mitsubishi-Cominco Smelting Co. Ltd. has approval from the Canadian Government to export 50,000 tons of lead concentrates a year to Japan, over a ten year period. The export will total about \$15,000,000 annually, beginning on January 1, 1966. Sales of products in 1966 amounted to \$42,636,000 as compared with \$26,482,000 in 1965. For 1966 total sales revenues could be broken down as follows: from sale of ore 48 per cent, lead concentrate 19 per cent and zinc concentrate 33 per cent.

In 1967 \$5.50 per share was paid in dividends, the same amount as in 1966. This makes about 11 per cent return on stock. Sales of shares in 1967 amounted to 316,900; they were not among the twenty most actively traded stocks. About 70 per cent of the shares is held by Cominco. Out of the 1,500,000 "free" shares, 316,900 were traded, which makes about 21 per cent.

In 1964 shipments totalled 14,070 tons crude ore averaging 18.6 per cent lead and 25.8 per cent zinc; net sales were \$1,056,930. In 1965 shipments totalled 364,168 tons crude ore grading 22.5 per cent lead and 29.1 per cent zinc; the concentrator treated 75,356 tons of ore to produce 3,524 tons lead concentrate and 8,377 tons of zinc concentrate; sales were \$26,482,000. For the first year only, high grade crude ore was shipped. The concentrator was completed in 1965 and the first shipment of concentrates left the property in December, 1965. Production in 1965 was at a rate of 1,000 tons per day of crude ore. During 1966, production was at a rate of 4,000 tons per day through the concentrator and approximately 800 tons per day of crude ore shipments. The average number of men employed in 1965 was 106, while in 1966 it was 245, because this was the first full year of operation for the concentrator. Net earnings for the year were \$34,194,000 compared with \$22,132,000 in 1965. Dividends of \$5.50 per share were paid amounting to \$24,840,000. In 1966 4,516,363 shares were issued and fully paid. Total share

value is now about \$225,818,150. Out of the 4,516,363 shares, 3,121,570 shares are owned by Cominco Ltd., which is 69.12 per cent.

Earnings per share and dividend record:

1964 \$1.12; 1965 \$5.55; 1966 and 1967 @ \$5.50.

EFFECT ON ECONOMY

The Pine Point development contributes less to the economy of the Territories than it would if the mine were located well within the Territories. Because of the mine's location, much of the secondary business that could be generated by a town based on Pine Point's payroll by-passes local businesses and flows directly to centers in Alberta, although there is some build-up of retail trade and services in Pine Point as well as in Hay River and even, but to a lesser degree, in Fort Smith. The proximity of the "South" encourages the growth of the area, but simultaneously facilitates cash outflow from the area. Still, the development of mining operations at Pine Point will assist in the development of the Northwest Territories' retail trade. Much of the purchasing for this enterprise will probably be made in the provinces, but is likely that expanded or new retail outlets will appear at either Hay River or Pine Point to divert at least some of the dollars from southern centres. Over the medium term the development of Pine Point could result in an increase in gross revenue for the retail trade in the Northwest Territories of \$1,000,000 per year. At the moment, however, not many retailers are rushing to open operations at Pine Point.

There is considerable potential for other companies contracting work with the Pine Point Company, but so far no one in Hay River has taken advantage of this. Laundry from Pine Point is presently sent out to Edmonton. It was mentioned to the two laundry companies in Hay River that there is a potential for more work. One said that he was too busy, and it is unknown whether the other one would follow up this lead and try to get more work and revenue from this source. For car rental companies, there is some potential for business with Pine Point Mines in the leasing and servicing of vehicles. Pine Point Mines are fairly interested in such an arrangement and one of the car rental agencies in Hay River will consider following up. The oil companies are not doing anything at present to serve Pine Point Mines directly through a local outlet.

There would also be a good chance for a small apartment building in Pine Point, but no one has taken any steps to provide this sort of accommodation. A great deal of parts and equipment could also be carried by firms in Hay River to support the activities in Pine Point.

The transportation systems also need re-examining. Other than for shipping ore, the railroad is used only to a limited amount by Pine Point Mines. To have cargo shipped in by railroad, it has to come in car load lots at the present time. Therefore, only major equipment such as Euclid trucks, drills, and construction machinery are brought in as well as the carload lots of chemical reagents. Byers Transport comes in to Pine Point twice a week, bringing food. Grimshaw trucking has a contract with Pine Point Mines to carry all non-food stuffs to the town or to the mine itself, such as equipment to be repaired, electrical transmissions, ore samples for test work, drums for back haul, odds and pieces. In 1966 the railroad carried in about 5,500 tons for the mine, at \$318 per car. They took out about 82 tons. Byers Transport carried 530 tons in, and 82 tons out. Grimshaw carried 897 tons in and carried out ten tons. In addition, the bus express carried from 500 to 700 pounds per week in both direction. Plane transportation is not used because materials often get misplaced and the plane plus the bus is slower than the bus alone.

There is a gasoline depot in the town, which is open from two to four hours per day, seven days a week. The present owner thought that perhaps in two or three years there would be enough work in the town for a full time operation. He stated that in the wintertime almost all cars are on blocks. To build a service station the lot designated for it is priced at \$11,000. The lot is 100 by 200 feet, and it is stipulated that a \$30,000 building would be erected. The gas station operator has approached Shell, Esso, BA and

Average prices per pound \$

	market	1959	1960	1961	1962	1963	1964	1965	October 31, 1966	January 16, 1968	May 7, 1968
Lead	New York	0.122	0.119	0.109	0.096	0.111	0.136	0.160	0.14	0.14	0.13
	St. Louis	0.114	0.129	0.115	0.116	0.12	0.136	0.145	0.145	0.14	
Zinc (Prime Western grade)	Montreal	0.106	0.107	0.102	0.099	0.11	0.134	0.155	0.142	0.135	0.13
(Electrolytic)	Montreal	0.122	0.133	0.126	0.126	0.128	0.12	0.151	0.151		

Source: DBS

Pine Point Activity on the Toronto Stock Exchange

	1965	1966	1967	
	High	High	Low	Close
	low	Low	High	Net Change
	\$88.00	\$74.00	\$48 1/4	\$47
	\$43.00			\$1 1/2
				\$5.50
				Dividend
				Sales
				316,900

Pacific 66, but none of them are interested in putting up the station. He hopes to get the mine contract; this contract would make the station economical. The company now buys gas and fuel oil by tender and the winner of the contract changes from year to year. Fuel and gasoline are hauled from Edmonton.

The company used 24,000 board feet of 2" x 8" lumber and 15,000 board feet of 1" x 4" material in a two month period. This would amount to 234,000 board feet per annum of rough lumber. In addition to the rough lumber, they also use some dressed lumber, but no figures are available. The business potential for the Fort Resolution sawmill is therefore obvious.

The owners of the shopping centre have stated that they were trying to get a laundromat into the shopping centre, but could find no one who would be interested in undertaking such a venture.

Economic development in the survey area is not only confined to the area itself. The benefits can be felt further away. At Trail, British Columbia a \$10,000,000 addition to the smelter was built to accomodate the ore from Pine Point. It created extra jobs, extra investment and extra payrolls. Product Research (metals) is carried on at Cominco's Product Research Centre, located in the Sheridan Park Research Community, near Toronto. The centre got a new impetus after the development of the Pine Point mines.

SMELTER

During 1966-67, a study to determine the feasibility of providing smelting facilities for lead and zinc ores and concentrates at Pine Point, was carried out by Canadian Bechtel Limited.

Provisions were included that air pollution would be at least partially controlled and sulphur-bearing gases from the smelting operation would not be permitted to be discharged into the atmosphere. Producing elemental sulphur from the gases would be profitable, but would not be sufficient to cover plant amortization. Some water pollution prevention would also be effected and in the estimates there are \$511,500 for effluent treatment out of a total of \$40,000,000 value of the smelter.

RENEWABLE RESOURCES

There are four types of renewable resources, all present in the survey area:

- 1) Water
- 2) Soil
- 3) Forest
- 4) Fish and Wildlife

Hydro-electric power is associated with water; agriculture with soil; logging and sawmilling with forest; fishing, hunting and trapping with fish and wildlife. Water and soil are the primary renewable resources, since all others depend upon them.

In the discussion that follows each type of renewable resources shall be treated separately.

WATER Of all the renewable resources the area abounds in one — water, and in that it is extremely rich. The vast reservoir of unpolluted water supply is a national asset gaining in importance, as the continent's



water supply is being either exhausted or polluted. In addition to its importance as a recreation, tourism, and fish-growing environment, it is the basis for the hydro-power stations, the demand for which is rapidly increasing. The electric power in the area is provided either by hydro-power or by diesel units. Hydro-power generated in the area exceeds by far thermo-power. Not only does generation in the survey area exceeds generation in the rest of the Territories, but the potential is great for additional generation. Two out of five principal Territorial rivers with hydro potential are in the area: the Lockhart and the Taltson. The Taltson River has a hydro-power station already, which does not exhaust its ultimate capacity, while the Lockhart is still untapped. Hydro potential of the Lockhart River is 105,000 KW on five sites, while the underdeveloped potential of the Taltson River is 120,000 KW on 11 sites (+ 25,000 KW already developed). This gives a total for two rivers at 225,000 KW undeveloped + 25,000 developed for a grand total of 250,000 on seventeen sites. Seventeen sites may seem an unusually high number, but a number of smaller sites is more convenient for Northwest Territories conditions, than one big site. This estimate excludes 50,000 KW feasible potential of the Slave River.

The largest hydro-electric station in the Canadian North is located within the survey area at Twin Gorges, 35 miles North-East of Fort Smith. It is a 18,000 kilowatt, 25,000 HP generating station, and was built at a cost of approximately \$9,120,000. The complete project includes a 170 mile transmission line to carry hydro power to Fort Smith and Pine Point. Seventy feet high guyed aluminum towers spaced about 1,200 feet apart support the transmission line. The station is operated from a remote control centre at Fort Smith. Construction of the project started in the fall of 1963 and despite unexpected difficulties, that made it necessary to pour concrete at temperatures of 50°F below zero, completion on target date was achieved, and the station began producing and supplying power on October 29, 1965. In the first year of operation, the Taltson River Hydro Electric Development, supplied over 54 million kwh, of which 47 million were consumed by the Pine Point mining area and townsite, and seven million kwh by the community of Fort Smith.

Diesel generating facilities are included in this area for convenience. At Fort Resolution there is a 325 kilowatt diesel generating plant, the capacity of which is not sufficient for the whole community. Another unit has been delivered, but it is not installed yet. With the installation of this additional unit, the power supply would be sufficient for all the buildings that have a fire marshal's permit. The power plant is semi-automatic, running for 24 hours. The people working for the plant are working only in two shifts, while from midnight until 8 A.M. the power plant is running unattended. The power rates cause some dissatisfaction among the Fort Resolution people: Government rates are lower than the non-government ones. In contrast with Fort Smith – Pine Point, commercial users at Fort Resolution pay rates higher than non-commercial ones. It is recommended to revise the schedule, and to have commercial rates if not lower than the non-commercial, then on a par with them. In Snowdrift there are two identical motors of 15KW each, running alternatively for 24 hours. Only few buildings are connected to the power-supply mainly because of the limited capacity. They are the government buildings (school, teacherage, freezer), church, priest's residence, Hudson's Bay Store and the manager's residence. There are no kilowatt meters and there is no charge to any users.

There are three agencies in the Northwest Territories which retail electrical energy and in the survey area all three agencies are represented:

- a) Private company, under franchise from the Northwest Territories Government – “Northern Utilities” supplying Hay River and Enterprise;
- b) Northern Canada Power Commission (NCPC) – Fort Smith, Pine Point, Fort Resolution;
- c) Department of Indian Affairs and Northern Development – Snowdrift.

SOIL In the past there was probaly greater acreage under cultivation in the survey area than there is at present. The proximity of a good agricultural district in the Peace River area to the south plus decreasing cost of transportation are some of the chief obstacles facing any expansion of agriculture in the survey area. Out of the four potentially arable land tracts in the Northwest Territories two are within the survey area: along the Hay River and along the Slave River. The Department of Agriculture* estimates that there are four million acres of potentially arable lands in the Territories. The largest area, more than two million acres, is

* This follows Day, J.H. and Leahey, A. 1957

located along the Slave River, north of Fort Smith. A soil survey of the Slave River Lowlands reveals that out of a total area of 2.2 million acres, 18.2% or 397,000 acres are classified as Class 1 arable land with no limitations. A further 1,182,000 acres are listed as Class 2 arable land with moderate limitations. Potentially arable land consists of aluvial river bottom deposits of sandy or silty loams.

Some factors that determine the value of soils are soil texture, soil moisture-holding capacity, natural fertility, natural soil structure, natural drainage, soil permeability, occurrence of permafrost, topography and flooding. Such factors as the cost of clearing, accessibility, the nature of the associated soils and land form are not considered, in the following rating. However, such factors greatly affect the desirability of land for agricultural purposes. Between Arability classes 1 and 2, these external factors probably are of greater importance in the selection of land than the soil rating.

Class 1, arable Soils in this class have the optimum combination of physical and chemical characteristics. They are naturally fertile, have good soil - moisture relationships and are expected to give good yields of all crops suitable to the area.

Class 2, arable with some or moderate limitations. These are fair to good arable soils but for general agriculture they are not quite so desirable as those of class 1 due to some limiting factors.

Class 3, arable with severe limitations

Class 4, non-arable

The soil around the only two settlements in the Slave River Lowlands, Fort Smith and Fort Resolution, is in class 3 — arable with severe limitations. However, they are useful for gardening and in small patches probably include the best soils, particularly within the town limits of Fort Smith and Fort Resolution and its immediate vicinity. The best soil along the Hay River is found adjoining the Town of Hay River.

Some climatic factors, particularly those affecting plant growth at three settlements

	Fort Smith	Fort Resolution	Hay River
Beginning of vegetative period*	May 12	May 17	May 19
End of vegetative period.	Sept 22	Sept 23	Sept 25
Duration of vegetative period (days)	133	129	129
Day-degrees above 42° in vegetative period	1509	1311	1347
Total daylight in vegetative period (hours).	1830	2210	2160
Precipitation during vegetative period (")	7.6	5.3	5.9
Water deficiency during vegetative period (").	4.0	5.6	4.7
Days from beginning of vegetative period to drought point.	60	51	56
Mean date of drought point	July 11	July 7	July 15

* Period during which the mean temperature is at or above 42°F.

There is great irregularity in the occurrence of first fall frosts, which vary from early August to early September and are instrumental in killing the grain crops in certain seasons. There is a range of 50 to 60 days from the time the earliest fall frost has been recorded to the time of the latest fall frost. This precarious situation is the key to the future of agriculture in the area. Slow evaporation allows snow to remain on the ground throughout the winter, although the area actually receives less snowfall than Ottawa.

The Little Buffalo River water is very high in salinity hazard and low in sodium hazard. This means that the water is not suitable for irrigation under ordinary conditions. Salt-tolerant crops must be selected if irrigation is contemplated. The Salt River, which flows northward into the Slave River below Fort Smith, drains Salt Plains and becomes progressively more saline as it flows through the Slave River lowlands. The saline content is largely sodium chloride leached out of bedrock by water in the river and streams or

deposited on the land after drainage waters have evaporated. The Salt River water is very high in salinity and sodium hazard. This water is unsuitable for irrigation under any circumstances.

The Slave River runs through about 342,600 acres of arable land in the survey area between Salt River on the south, McConnell Island on the north, Little Buffalo River on the west and Taltson and Tethul rivers on the east. The best locations, with the best drainage, are to be found on the highest banks along the Slave River. The lower terraces along the river have good drainage in general, but may occasionally be flooded and for that reason are rated as less desirable. On these locations vegetable crops, including potatoes and early maturing vegetables could be grown. The soil away from the river banks, where drainage is slightly poorer and where the hazard of early frost is perhaps somewhat greater, is probably best suited to cultivation of hay, coarse grains, and perhaps forage seed crops.

The Little Buffalo River runs through 12,600 arable acres which occur as narrow discontinuous levees and terraces of the Little Buffalo River. It is the most fertile soil in the Lowland area; it is considered the best in the Lowland for production of vegetable crops; it has relatively good accessibility provided by the Little Buffalo River.

The most suitable forage crops are timothy, western rye, red top and brome grass. A good range of garden vegetables is grown for table use and the local market, among them: lettuce, spinach, radish, cauliflower, cabbage, kale, peas, carrots, beets, turnips, green beans and potatoes. Tomatoes, squash, pumpkins and gourds are hazardous crops north of Fort Smith; they are produced in greenhouses. Perennial vegetables, with the exception of rhubarb of a poor quality, are not generally grown. Cultivated strawberries and raspberries are grown, while native fruits such as wild currants, gooseberries, blueberries, raspberries, and cranberries are found. Crabapple trees successfully bore good crops of small fruit at Fort Resolution.

Adjacent to the Mackenzie Highway; the following land forms occur:

- 1 Deep peat bogs
- 2 Recent beaches of Great Slave Lake
- 3 Old beach and interbeach complex of Great Slave Lake
- 4 A morainic area above the escarpment
- 5 A lacustrine plain extending from the morainic area to the Alberta border
- 6 Alluvial deposits along the Hay River; classified as follows:
 - a) Recent alluvial soils
 - b) Mineral soils on silty clay alluvium; subdivided to:
 - I Wooded calcareous soil
 - II Brown wooded soil
 - III Grey wooded soil

Grey wooded soil is distributed in the survey area as follows:

East side of river from Great Slave Lake to the River bend due east of mile 7.0 from Hay River	2300 acres
West side of river from lake to mile 9.0	3200 acres
Other area south to mile 20	2400 acres
Areas south of Alexandra Falls	<u>1600 acres</u>
Total	9500 acres

These soils are considered to be the best potential agricultural soils in the Hay River area and they are suitable for the production of any of the crops which can be grown under the climatic conditions. Most of these soils occur near the town of Hay River.

c) Thin peat on silty clay alluvium:

East side of river	2700 acres
West side of river	2000 acres
Total	4700 acres

These soils are still considered good, but less so than grey wooded soils.

d) Thin peat over sand

e) Sand and gravels

Potatoes and a large variety of garden crops can be successfully grown there. The amount of land, while small in comparison to the amount of land in the Slave River Lowland is more than that needed for the production of crops for the local Hay River – Pine Point market. The mineral soils are more susceptible to drought, but crops on them will likely suffer less from summer frosts, than those on the thin peat soils. The lesser of the two evils is drought, and therefore the mineral soils (particularly Grey wooded soil) are preferable to the thin peat on silty clay alluvium soils. Early maturing varieties of barley and oats and hay produce fair crops on non-droughty soils, i.e. on the thin peat soil.

Agricultural activities have a long history in the survey area as supporting activities for the mission hospitals and schools of the Anglican and Roman Catholic churches. According to all reports these endeavours were quite successful for a period. After the advent of improved transportation facilities both within the Territories and with the south in the 1920's, most farm and gardening activities ceased or were drastically curtailed. Recently there has been a great deal of renewed interest in the commercial agricultural potential of the survey area by private individuals and the number of enquiries as well as the positive demand for designated parcels of land is increasing rapidly from year to year. There is a reasonably large ready market for most agricultural products since the population of the whole Mackenzie District is about 20,000 and the cost of freighting perishables into Hay River is about \$5.00 per 100 lbs. This allows a very high return on products grown in the North. Generally, the land in the Fort Smith area is not very good for agriculture, but areas like Fox Hole and Grand Detour appear particularly promising. Nevertheless, these areas will not be a resource to the Territories until there is road access to them.

The 1961 Census recorded a total of 11 farms in the NWT. Out of those there are two big ones in the area and three or four small ones which start and collapse periodically. At the present time there are two full time commercial agricultural operations within the area of the survey. One, called Paradise Gardens and operated by Mr. Ben Greenfield, is a market garden operation on a bench in an ox-bow of the Hay River about 15 miles south of the town of Hay River. The other is Buffalo Crossing Farm Ltd., a mixed farming operation that straddles the Alberta – NWT border at the Salt River 15 miles west of Fort Smith. Mr. Albert Plamondon is the operator of this endeavour. Both the present owners started in 1966.

'Paradise Gardens' consists of 18 acres of land of which 11 acres are presently under cultivation. The amount of land under cultivation is being increased. Along with the house and outbuildings Mr. Greenfield has a log and fibre-glass greenhouse as well as several plastic "tents", and is presently in the process of constructing a root cellar. The whole range of berries and vegetables common to most of Canada as well as many flowers are grown; only tomatoes and squash require the special protection of the "tents" and the greenhouse. Sweet corn is a very marginal crop in this area, but it is hoped techniques for growing this plant can be improved. Present investment in this farm operation is estimated to be \$15,000 and demand for the products is far in excess of supply.

'Buffalo Crossing Farm Ltd.' consists of 3,340 acres of land of which 2,500 acres are leased from the Alberta Government, 800 leased from the NWT and the other 40 acres which are in the NWT surrounding the Salt River Bridge are owned outright as a building site.

The year 1967 was the first full year of activity and much that is going on is in the form of experiments. The general aim at the present time is to develop mainly a livestock and poultry operation using locally grown grains and hay supplemented with vitamins and special feeds imported from outside. Markets would be both local and outside.

In particular, Mr. Plamondon seeded 75 acres of rape and 15 acres each of wheat, oats, barley and flax. Although there was not enough time in the fall of 1966 to properly break and prepare this virgin land, crop growth in 1967 was excellent, due in part to the above average rainfall. One small part of the crop was not fertilized and there is an obvious difference in the growth. In 1966, \$4,500 worth of hay was made and sold to the Wood Buffalo National Park, buffalo operation. In 1967 \$3,000 worth of hay and green feed has been contracted for. Most of the summer season of 1967 was spent improving the building site and erecting buildings. By the end of 1967 there was a fully winterized house plus two other buildings designated for poultry, one of which was previously the living quarters. Total investment after one year is over \$20,000.

Future plans include 2,000 chickens for eggs and meat and 500 head of stock. The stock plans are not too definite. They will depend on the success of growing feed. Possibilities include beef, buffalo, mutton and wool, pork, and milk production. Large scale growing of potatoes is also considered since they grow well and there is a good local market.

FOREST The following trees are common to the area:

English:	Latin:
Alder	<i>Alnus tenuifolia</i> Nutt
Aspen	<i>Populus tremuloides</i>
Birch	<i>Betula papyrifera</i>
Black poplar	<i>Populus balsamifera</i> L.
Black spruce	<i>Picea mariana</i>
Pine	<i>Pinus banksiana</i> L.
Spruce (white)	<i>Picea glauca</i>
Tamarack	<i>Larix laricina</i> (DuRoi) Koch
Willow	<i>Salix</i> (3 variants): interior, <i>arbusculoides</i> , <i>pseudomonticola</i>

Black spruce and tamarack grow in the swamps, jackpine on well drained gravels and sands, and white spruce, aspen and some birch on the medium and fine textured mineral soils. White spruce (*Picea glauca*) is the most important timber tree and all commercial operations have thus far confined their attention to this species. Most of the merchantable stands are at least two hundred years old, and the regenerative process is rather slow. Practically all the potentially arable land in the area is now covered with forests of spruce and poplar.

Because of the permafrost the roots run horizontally and not vertically. If an isolated tree starts growing alone it can have enough support, but in a cluster the roots intermingle and the trees support each other. If some trees from the cluster are removed, the other fall down on the slightest provocation.

On the Slave River from Fort Smith to Great Slave Lake there are 1,185 square miles of timber with 85,000,000 FBM for trees 10" DBH (diameter breast height) and greater, the main species being white spruce. However, there are no more than 20 million FBM relatively conveniently concentrated in the Slave River Delta (appendix VII). By forestry inventory there is sufficient timber available to operate a saw mill and in conjunction a planing mill for years to come (15 to 20 years).

Timber resources of the area, though renewable are treated as non-renewable, that is they are not exploited on a sustained yield basis, and the Hanzlik formula* is not applied. The depletion of stock can not be considered as a tragedy. It is true that farmers gather their crop every year, while sawmills in this area can gather theirs every 100 years. Yet, there is an experimental forest service nursery in Fort Smith attempting to improve reforestation with fast-growing species suitable for the area.

Cutting is largely concentrated in the neighbourhood of settlements. This has created the problem of almost complete deforestation in the vicinity of some settlements (Hay River), a problem which will become more severe with the passage of time due to the expansion of the population.

The Slave River between Fort Smith and Great Slave Lake has been the most heavily lumbered area. Lumbering has been carried on there continuously since 1936 and the total cut to date has been between twenty-five and thirty million board feet. Second in importance has been the Hay River area which has produced slightly over two million board feet. This is not properly a river bottom forest area but, though the forests are inferior in quality, the accessibility provided by the Mackenzie Highway, which traverses the area, has led to their exploitation. Operations have been small and most of the lumber was cut for the local market although some shipments have been made to Yellowknife and down the Mackenzie River. The supply of timber has contracted to such an extent that only two small mills, operating intermittently, now remain.

Good utilization of the trees in logging is enforced by regulation but the waste in milling is rather high. This is due to the small size and general poor quality of the mills operated. Slabs, sawdust and shavings are almost completely wasted.

Mills in the area are small, (appendix VII) the largest (Fort Resolution) having a capacity of slightly over 30,000 FBM daily and the smallest (Mile 11) only about 5,000 FBM. All are circular mills. The Fort Resolution mill has edger and other equipment while the small mills have only a headsaw and a trimsaw. All are gasoline or diesel powered, some by a belt drive from a tractor. Fort Resolution mill also operates a planer because the market for rough lumber is very limited due to the lack of remanufacturing facilities.

The future outlook for the timber industry in the survey area is one of expanding markets and diminishing supplies of good mature timber, particularly in the Slave River area. The rate of depletion does not, nor will for some time to come, exceed the rate of growth. Too large a percentage of the productive forest area is, however, covered with young growth which is not likely to reach maturity before present supplies of mature timber are exhausted. It is, therefore, unlikely that the lumber industry will be able to expand sufficiently to cope with the increased demand. Poorer quality timber will have to be cut, and despite that prices are almost certain to rise.

Fort Resolution Co-operative Sawmill: Fort Resolution – a producing Co-operative – commenced operation on May 1, 1965, and has been operating since that time with longer or shorter pauses. The optimum capacity of the mill is 30,000 FBM, while the actual production is between 12,000 and 20,000 FBM on the average. All the components of the mill do not have the same capacity, resulting in some bottleneck effects.

* Calculation of allowable annual cut (Hanzlik's modified formula)

$$AC = \frac{Vm}{R} + IA$$

AC = Annual cut

Vm = Volume of mature timber

R = Rotations in years

I = Mean annual increment of immature stands at rotation

A = Area of immature stands

Employment at the co-op sawmill is naturally limited to a certain number of people, and not everyone who wants to work can get a job, simply because there are just so many jobs available. Because of this, good men are drifting away in search of work elsewhere. By providing steady employment at Fort Resolution, either at the mill or elsewhere, all the best workers could be preserved for the community which would be a definite asset.

The lumber is of a very good quality; dimensions* would yield 75-80% construction and standard grade. The lumber at Fort Resolution sawmill is not graded because there are no facilities and there is no licensed grader. Graded lumber usually commands a higher price, than 'one grade' lumber.

Trees that are cut are usually eighty feet in length and over, but the diameter at BH (breast height) is rather narrow. Trees should not be cut that are less than 12" diameter BH and at the lowest 10". Nevertheless some 8" or less were actually cut.

Buildings are located on land leased from the Federal Department of Transport at the nominal rate of \$1.00 per annum. The lease provides for cancellation by the Department upon ninety days notice, but the initial lease term of five years may be renewable. Under agreement with the Catholic Church its garage is being used. The garage has four bays with three big gates for truck size vehicles, and one smaller gate for passenger cars. A part of the agreement is the annual requirement that the Cooperative supply 500 cords of wood to the Mission.

The cost of production has gone from \$91.84 per M. in 1965-66, to \$123.70 per M. in the first six months of 1966; production has dropped from 992,000 FBM to 425,000 FBM for the same period of time. Prices obtainable from established markets are \$60-70 per M for rough lumber and \$95-110 per M for the dressed lumber. At best the production cost exceeds the selling price by about \$10.00 per M.

The Sawmill could be a profitable organization, but it is not. The Co-op is not able to pay all the wages that are already earned. However, there was a feeling in the air during the annual meeting of beginning something, as though it was a brand new co-op. The members' enthusiasm and willingness to work is evident, but the skill and care for the equipment do not always match the spirit. Hard-driving management is probably the only way to make a success of such a marginal project. If a subsidy for the community is necessary the subsidy should be provided but not through the cooperative.

There are two small items, that can contribute to the efficiency of operation and reduction in costs:

1) Sale price of slab wood at Fort Resolution is \$12 per cord, which is less than salvage cost. It should be given away free, to those willing to pick it up themselves at the site. 2) Hand tools and chain saws should not be owned by the co-op, but by the men using them.

There is a number of suitable sites for a sawmill in the vicinity of Fort Resolution, which are in close proximity to the timber stands. The mill has recently been moved to a new site near the timber, at the mouth of Nagle Channel, i.e. just one half mile down from the mouth of Nagle. A road leading from Fort Resolution to the new mill site may form an embryo of the future road either toward Fort Smith or Fort Reliance. This road can be classed under the Federal Government Incentive Program as a "road to resources", and as such could qualify for financial assistance.

At the time of writing the Fort Resolution co-op sawmill was in operation. Government employees were withdrawn from management, but some services were supplied: government made available a bookkeeper or accountant, at the co-op's request.

* 'Dimensions' are planks two inch in thickness and over with the following naming of grades in decreasing order of quality: construction, standard, utility, economy.

Fish and Wildlife:

A) FISH: Great Slave Lake accounts for about 97 per cent of the total commercial fish landed in the Mackenzie District. Its sport and domestic fishing has the lion's share in the Mackenzie as well. The survey area may account for almost 99 per cent of the commercial fishing in the District counting the fishing on the smaller lakes: Thubun, Nonacho, Stark and Tsu. Some shallow lakes freeze to their entire depth and contain no fish. Such are in the minority and are geographically confined to the area west of the Slave River. The lakes east of Slave River are deep and there are indications that some of them not yet tapped, contain a fair amount of fish.

There are 26 species of fish in the Great Slave Lake. The most significant species are:

English	Latin
Lake trout	<i>Cristivomer namaycush</i>
Lake whitefish	<i>Coregonus clupeaformis</i>
Inconnu ("the unknown")	<i>Stenodus leucichthys mackenzi</i>
Arctic grayling	<i>Thymallus arcticus signifer</i>
Northern pike	<i>Esox lucius</i>
Pickerel (walleye)	<i>Stizostedion vitreum</i>
Burbot	<i>Lota lota lacustris</i>
Goldeye	<i>Amphiodon alosoides</i>

There are five species of sport fishes: trout, inconnu, grayling, pike and pickerel. Arctic char is the only sport fish, found elsewhere in the North, missing from the survey area. Trout and whitefish account for more than 95 per cent of the commercial production. Trout is the only fish that is of interest to all three types of fishing: commercial, domestic and sport. Whitefish, the main commercial and domestic fish, is of no interest in sport fishing.

A lake trout weighing 79.5 pounds was a record for Great Slave Lake; Arctic grayling averaged between one and two pounds, but the world record caught in the East Arm of Great Slave Lake weighed in at an even five pounds. Inconnu, a relative of the whitefish, is found in Great Slave Lake and at the bottom of the Rapids of the Drowned on the Slave River at Fort Smith. Goldeye is present in Slave River.

Extensive studies on Great Slave Lake showed that 64 per cent of the fish recovered after tagging were recaptured within ten miles of the release point with an average period of 400 days between release and recapture. There appeared to be no directional component associated with this movement, although in rare cases fish had made trips of up to 200 miles, i.e. the whole length of the lake.

Infestation rates are low and the survey area fish is justly known as a "healthy fish". In the western part of the lake lamprey occasionally appear. Fisheries Research Board is doing intensive studies and offers a reward for each lamprey being submitted. During the 1967 fishing season less than thirty were caught by the fishermen, although the evidence of lampreys' presence would indicate somewhat higher frequency.

The fishing regulations require a net with a mesh that is not smaller than 5 ½". The quota on Great Slave Lake is based upon a 1/2 pound per acre catch per season, for whitefish and trout, which makes it 9,000,000 lbs. per annum. In addition to whitefish and trout an equal amount (i.e. 9 million pounds) of coarse fish could also be taken from the lake each year. At the moment the annual catch does not exceed six million pounds. Of the total quota of 9,000,000 pounds, the summer catch is allowed to be 5,200,000 and the winter catch 3,800,000 pounds. When the seasonal quota is reached (either summer or winter) in any area, it is closed for further fishing for the remainder of the season. About two-thirds of fish is actually taken in the summer season May 15 to the end of September. The winter fishery yields 1/3 of the annual catch and operates December 1 to March 31.

The technique of the summer fishing does not materially differ from the techniques used elsewhere. In the winter fishermen use ice jiggers, a hooked device which enables them to stretch a net under the ice. Nets are successfully used throughout the winter but constant tending is required. The off-seasons coincide with break-up and freeze-up periods and also the spawning period of the commercially valuable fish.

Besides 9 million pounds for commercial, there is a quota of one million pounds for domestic fishery. However, a quota for domestic fishery is less significant because of the treaty rights of Indians and because the catch is harder to measure in pounds. The area closed for commercial fishing is closed primarily for the benefit of domestic fishing and for sport fishing. Areas around the main settlements are used primarily for domestic fishing while McLeod Bay is used primarily for sport fishing. Areas closed for commercial fishing (and the area increased several times) are open for sport and domestic fishing. Besides the natives, other persons living in remote areas (RCMP officers; missionaries) are allowed to engage in domestic fishing. There is no licence needed, nor is there any charge for domestic fishing.

Fish is used not only for human but also for dog food. The domestic fish production for the Great Slave Lake is about one million pounds. The quantity fed to dogs was estimated to be approximately 80 per cent of total domestic catch, or about 800,000 pounds while human consumption amounted to only 200,000 lbs.

Sport fishing in the park is governed by the National Parks angling regulations and a \$2.00 park fishing licence is required.

There is no closed season for any species of fish for domestic or sport fishing. For sport fishing, however, there are bag limits:

SPORT FISHING LIMITS:		CATCH	POSSESSION
Lake Trout	.....	5	10
Grayling	.....	10	10
Pickrel (Walleye)	.....	10	10
Pike	.....	10	10

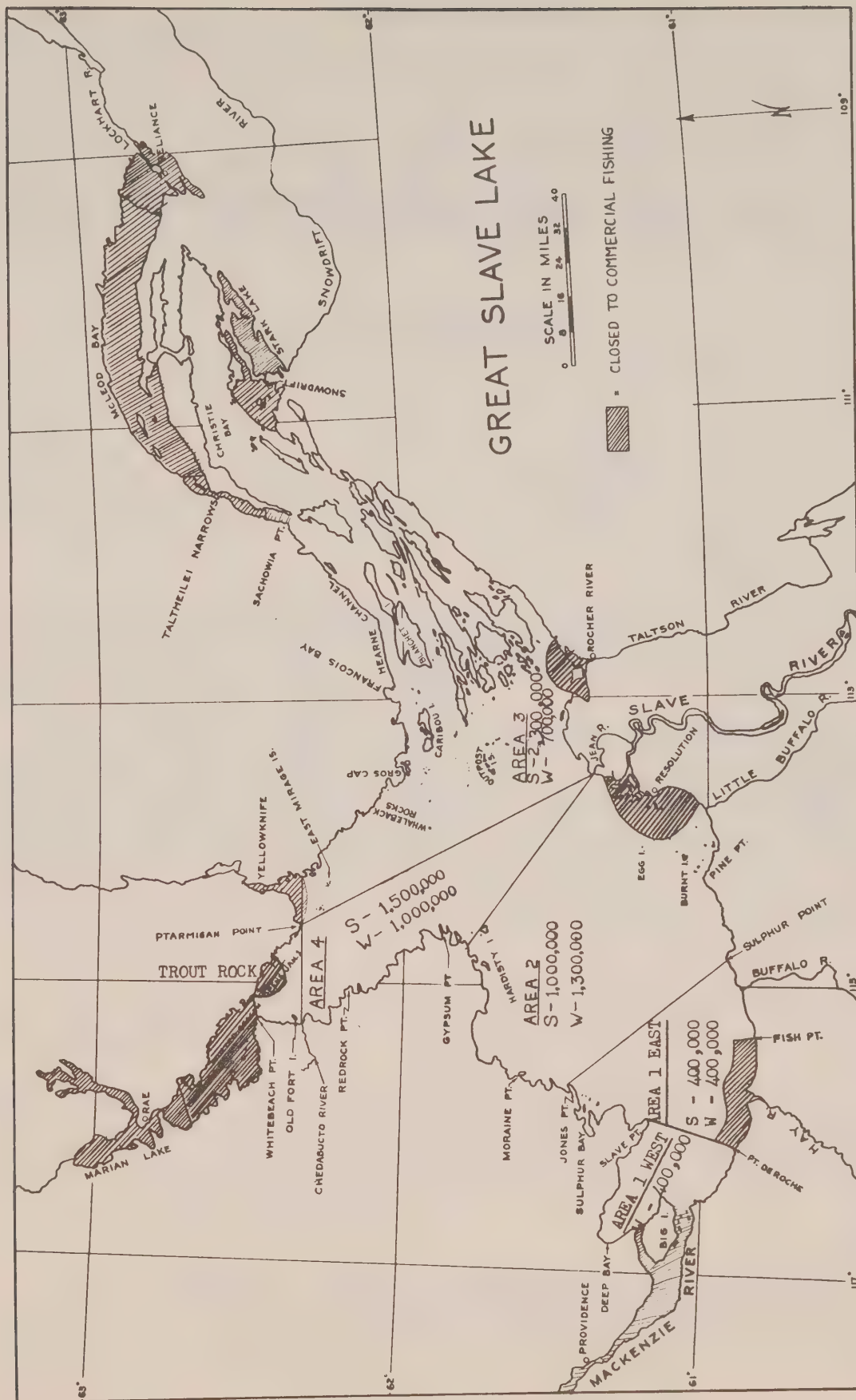
In the Frontier Fishing Lodge only the best part of the fish is filleted. The rest is more than sufficient to feed all Snowdrift dogs. However, only those working in the lodge bring the offal home for their own dogs. Others fish for dog food.

In Hay River there are four fishing companies: Menzies, Alaska, Kucher and Carter. Carter's plant is at the moment rented to Menzies. Great Slave Lake Co-operative Fisheries at Hay River was incorporated on October 17, 1966, but has not commenced operation as yet. In the meanwhile, an informal "group of fifteen" is active on a quasi co-operative basis. The annual commercial fish value is about \$1,000,000. The average price per pound received by sellers for the winter season is 15 cents; for the summer season 11 cents. Although there were 289 commercial licences issued, there are only about 120 fishermen engaged exclusively and full-time in fishing. The total wage income is estimated to be about \$500,000.00 which makes an average of more than \$4,000.00 per fisherman for an eight month operation. Sixty-two per cent of the fishermen were licenced for one year only. The turnover compared with the Pine Point mine is relatively low. The commercial fishing on the Great Slave Lake started in 1945 and for the 23 years of operation the safety record was good.

GREAT SLAVE LAKE FISHERIES STATISTICS

(data from Departmental sales slips)

Annual limit ("quota")	9,000,000 pounds whitefish and trout round weight
Catch 1967	3,659,776 "
Balance in 1967	5,340,224 "



Annual Catch, Commercial

	Whitefish	Lake Trout	Inconnu	Pike	Pickereel	Barbot	Mullet	Total lbs.
1964	4,125,161	679,833	299,256	197,685	23,140	11,094		5,336,169
1965	3,641,744	808,549	304,612	255,214	30,766			5,040,885
1966	2,754,374	581,149	212,479	458,681	32,081	3,400	57,401	4,099,565
1967	2,281,073	658,497	234,439	412,276	35,067	21,286	17,138	3,659,776
	12,802,352	2,728,028	1,050,786	1,323,856	121,054	35,780	74,539	18,136,395

Ratio of whitefish to trout

1963	6.3 : 1
1964	6.0 : 1
1965	4.5 : 1
1966	4.4 : 1
1967	4.6 : 1

Licences issued and revenue

	Licences issued		revenue \$	
	1965	1966	1965	1966
Resident commercial	208	154	1,240.00	770.00
Non-resident commercial	167	135	1,670.00	1,350.00
Indian or Eskimo	133	109	free	free
Resident angling (@ \$1.00)	503	626	503.00	626.00
Non-resident angling (@ \$2.00)	2,103	2,533	4,206.00	5,066.00
Total	3,114	3,557	\$7,619.00	\$7,812.00

Men and equipment engaged

Winter

year	fishermen	aircraft	snowmobiles	motor toboggans
1965	230	4	57	11
1966	210	1	58	6

Summer

year	fishermen	fish packers	aircraft	fishing craft	barges
1965	178	4	4	70	7
1966	196	5	3	94	7

Estimated catch Snowdrift area, fall domestic fishery, 1961 (Snowdrift River, Stark Lake, Stark River, Ogilvie Lake, Great Slave Lake):

Whitefish	Catch in pounds			No. of nets
	trout	others	total	
28,148	6,175	9,081	43,404	193
65%	14%	21%	100%	

The estimated domestic catches at five locations for a winter season.

Snowdrift	Fort Reliance	Fort Resolution	Rocher River	Hay River	All locations
106,000 lbs	9,000 lbs	29,000 lbs	23,000 lbs	30,000 lbs	197,000 lbs

Domestic fish production by Indians 1963-64

	Indian population (Dec. 31, 1963)	Fish caught lb.	
		total	per capita
Ft. Smity	205	68,775	335
Ft. Reliance	253	93,000	368
Rocher River	204	75,200	369
Hay River	202	102,700	508
Total	864	339,675	average 393 per capita

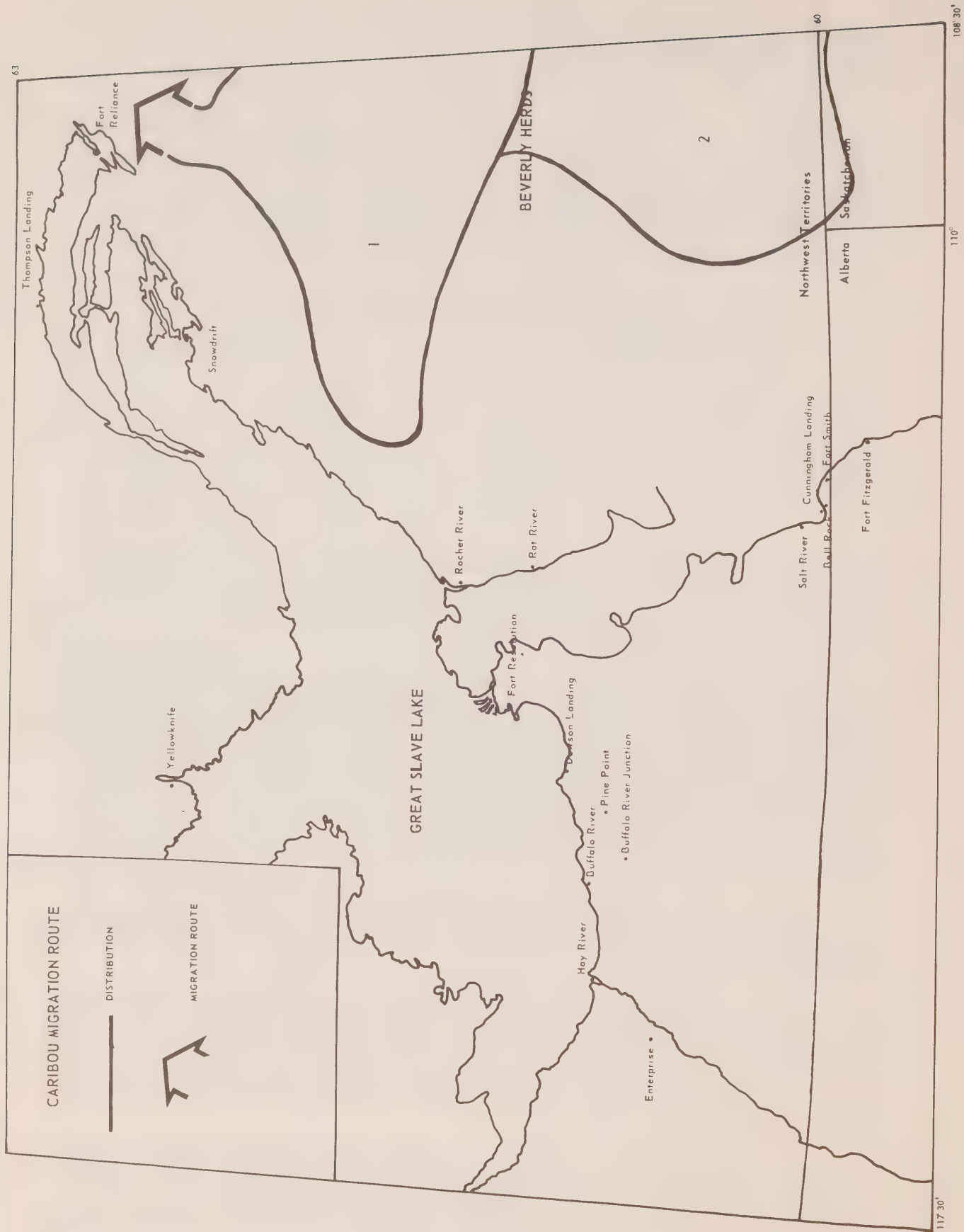
B) WILDLIFE: — Three related activities depend upon game and wildlife. They are hunting, trapping and fur farming. Game is defined as “big game, birds of prey, fur bearing animals and game birds in any parts of the N.W.T.”. Traditional activities such as trapping and hunting should be assessed on the basis of the available renewable resources, on a sustained-yield basis.

The renewable resource base of the traditional economy is limited in its ability to renew itself. It is estimated that the worth of the ‘natural capital’ in renewable wildlife resources in the Territories is \$100,000,000.00, of which only \$2 million is harvested per annum. Optimists state that hunters and trappers should be able to recover 25-30% (\$25 million) annually. The survey area with its developing settlements and with its highly developed and frequently used transportation network is not advantageous for the proliferation of wildlife. It could also be expected that numerically fur bearing animals in the Slave River delta will diminish because of the extensive logging activities. The western part of the survey area appears to be over-trapped, while segments of the eastern part would probably benefit from the extension of selective hunting and trapping.

There is no charge to Indians for a “General Hunting Permit” which covers trapping as well, but every hunter-trapper should be in possession of one. Their main purpose is to facilitate record-keeping and control of animals harvested.

HUNTING: No non-resident hunting was allowed until 1959 when the first sport hunting season for buffalo since 1886 was held during the autumn in the Fort Smith area. Buffalo hunting was a very popular attraction until anthrax broke out in 1962. Buffalo hunting for residents of the NWT resumed in 1967, and the hunting season on buffalo are the months of November and December in Game Management Zones 3,4 and 5, Northwest and Northeast of Fort Smith. 1,700 is the count of bison in Hook Lake and Grand Detour area which is within the zones 3 and 5.

General Hunting licences are restricted to those who possessed them in 1938, and to their descendants. A hunting licence is a status symbol, which proves that the person is an old-timer. The people like to have them even though they are not using them. The licence was free for Indians, for non-Indians it was \$5.00. As in all other National Parks, hunting by sportsmen is prohibited in Wood Buffalo National Park.



Caribou in the Northwest Territories and Northern Prairie Provinces numbered about 3,000,000 at the time of the arrival of whites on the continent. Numerically, they were steadily decreasing until a few years ago when they reached their lowest ebb. It appears that their numbers are now gradually and slowly increasing. One of the four big herds of caribou — the Beverly herd* — numbered 32,400 in 1955. At the beginning of November 1967 their number increased to 159,000. This increase is not only due to natural increase, but also to the east-west migration, but caribou proximity to Fort Reliance is of more interest to the hunters than their relative abundance. Out of the three large herds that comprise the Beverly herds, herd 1 numbers 127,000 caribou. This is the herd that is closest to Fort Reliance but its migration routes are not identical every year.

TRAPPING. Trapping is not a big business in the area. There is still room for an individual with drive since few people are interested in this kind of work. From the trapper-producer in the area, fur is channelled through three outlets: it can be purchased by the traders in the area, outsiders can come at the end of the season for the express purpose of buying fur; or the producer can deal directly with one of the seven fur auction houses in Canada. The ones in Montreal, Edmonton and Winnipeg are those mostly patronized by the local producers.

There are irregular cyclical fluctuations in a number of fur-bearer populations. These cycles vary from species to species, but is usually shorter than ten years. This cyclical distribution warrants the detailed tables found in the appendix, for the period of last nine years. Three detailed tables are given concerning trapping, accompanied by a detailed explanation of the tables.

FUR FARMING: There has been a previous attempt at establishing a fur ranch to supplement trapping. This particular undertaking did not prove profitable and was consequently abandoned. The competitive position of such ranches compared with those of Southern Canada is not good. A fur farm needs isolation for the animals, very clean air, very dry air, good water, and a good, consistent, cheap, source of feed, and road access. The only fur-bearer that is being considered for possible ranching in the survey area is mink in conjunction with the Hay River fisheries. Mink are willing to take fish, but this food has to be supplemented. Land must be made available in a suitable location within five to ten miles of the fish plants. The mink's peak feeding period is late fall and early winter and this is the off-season for commercial fisheries. If the operator is to catch his own fish the most suitable section of the survey area is the Precambrian Shield. The Shield is better than the Hay River area since it is dryer, the air absolutely pure, and the water excellent. As well there are lakes adequately large to be capable of producing a continuous supply of fish and yet narrow and protected enough to allow fishing every day. The area 30 miles directly east of Fort Smith is capable of supporting fur farming as soon as a road crosses the Slave river.

Areas around Snowdrift and Fort Reliance will have some potential for fur farming. There are no roads, but there is relatively inexpensive barge service in the summer months and the presence of these communities eliminates the dangers inherent in complete isolation. Great Slave Lake as well as smaller lakes can be fished all year.

The other three herds being: Bluenose, Bathurst and Kaminuriak.

RECOMMENDATION

Within the Northwest Territories the area which was the subject of this survey is without doubt the most highly developed already, as well as the one most amenable to further economic development. This is largely due to the relatively high level of development of its transportation network and its tie-in with that of Alberta and to the presence of a highly integrated and in many ways completely acculturated native population. As the report showed, however, difficulties still exist and in the course of the fieldwork and compilation of this report the following suggestions, many of which have been touched upon already, were arrived at to overcome some of the difficulties and in some measure help to accelerate the development of the region. They are divided into those that affect the whole region and those that apply to particular communities.

A — Regional.

— The most important factor for future regional development will be the extension of the road and highway network. Though it will be some time before an all-weather road is completed to Ft. Reliance, it is important that the route it will eventually follow be decided upon soon so that it will be possible to co-ordinate short term local road building programs with the larger long-term plan. Though many people locally now seem to favour a route following the shoreline it is felt that a route further inland may have greater advantages in terms of tourist potential, the opening-up of new trapping areas, the encouragement of mineral exploration and last but not least of lower construction and maintenance costs. In the immediate future and independent of the major road building plans, the all-weather road to Dawson Landing should be completed as soon as possible and a heavier, permanent bridge built across the Little Buffalo River.

— It appears that even the present tourist potential of the region is not exploited to its full capacity. The expansion of cabin camp facilities should be encouraged and the government should attempt to improve means of helping local people finance such projects. At all existing roadside campgrounds, improvement of drinking water supply as well as of sanitary facilities would greatly enhance their appeal to tourists.

— A decision on park development regarding the creation of a new park on the East Arm and extension of Wood Buffalo Park should be made as soon as possible to remove the uncertainty that now seems to impede the expansion plans of some local businessmen. In this context a positive decision regarding a highway link between Fort Smith and the Alberta highway system to the East of the Mackenzie Highway, forming a loop partly passing through the park, would greatly increase tourist flow and the demand for new service facilities.

— Current attempts at commercial farming and truck gardening in the area seem to be very promising. There is considerable interest from experienced farmers in starting additional operations, but there are at present great difficulties encountered by these people in acquiring title to land. It is of the utmost importance that the dissemination of information on land acquisition be improved and that the transfer of titles be streamlined and speeded up. The market for local farm and garden products can be expanded considerably and governmental agencies should do their utmost to buy and promote local agricultural products to assure farmers particularly during the difficult first years of operation of a market for increased output.

In this context considerable effort at developing commercial buffalo ranching in the area seems justified. Some North American experience can be drawn upon and it appears that compared with the history of the Mackenzie Delta Reindeer project a far more modest investment in the development of buffalo ranching in the survey area would be more certain of achieving material success within a much shorter time.

— A higher investment seems required in public health education of the native population, particularly in regard to VD and pregnancy of all persons over 16 years of age regardless of marital status. To all married couples free family planning counselling should be made available upon request.

- There still seem to be areas of employment opportunity, particularly in the semiskilled and seasonal sectors, in which the available native labour pool is not fully utilized. An example should be given to remedy this situation on all federally or territorially operated or financed projects. Counselling services to help local workers overcome the problems of social and cultural change which often are at the root of their lack of success at wage employment should be expanded. It appears that native employment at Pine Point could be increased considerably and it is suggested that the Company be approached with a concrete proposal for the subsidization of on-the-job training of indigenous workers. Key elements of such a proposal would have to be: (a) The government provides housing for all native employees or trainees in the town of Pine Point on a rental or rental-purchase basis with buy-back provision at no cost to the Company. (b) The government subsidizes directly the on-the-job training program by compensating the company for losses in operating efficiency or requirements for increased work force incurred through the training program. (c) The government agrees not to interfere with the training process on the job while the company agree to co-operate with the government in the development of the training program. (d) The government provided for trainees and their families intensive social counselling and home economics training in their home environment. (e) The development of supplementary formal adult education facilities at Pine Point might be considered as a follow-up project.

- The feasibility of a smelter for Pine Point ores and those of possible additional producers in the area at Pine Point should be reassessed periodically. Again considerable expenditures by the government to subsidize such an undertaking directly or indirectly appear to be justified in the interest of regional development.

B – Local

Hay-River

- An independent feasibility study of a fish packing and processing plant should be commissioned as soon as possible. Experiments on canned northern specialties as well as of canned kosher products should be initiated as soon as possible. This should be tied in with experimentation with coarse fish along the lines being now developed in Saskatchewan as well as with utilization of rejects for pet and mink food.

- Although it has been suggested in the past for many other settlement, serious consideration should be given to the possibilities of locating a brewery at Hay River. The market is certain to increase rapidly in the coming years and southern breweries should be encouraged to undertake detailed feasibility studies. The territorial government might consider tax incentives, training subsidies and permission of higher alcohol contents for beer brewed and consumed in the Northwest Territories to make the project more attractive.

Fort Smith.

- Though local hopes for a Northern University in many ways appear to be premature, gradual expansion of education facilities and the location at Fort Smith of specialized research facilities appear to be feasible. Most promising appear to be the areas of agricultural, wildlife and botanical research. Boarding facilities, particularly for grade 10 to 13 students should be expanded together with the corresponding classroom facilities.

- The location at Fort Smith of an extensive home for older missionaries, particularly of the Oblate Order, which is being discussed with considerable interest locally, should be supported by the government and a preliminary study appears indicated to find ways in which these men could be given the opportunity to make their extensive experience in the North available to others and to integrate into local projects.

- Fort Smith appears to be an excellent location for permanent establishment of the Mobile Detention Camp.

- The school and community libraries should be integrated and made available to the whole community. At the same time library facilities should be planned for considerable future expansion if Fort Smith does in future become a town of institutions.

— Presently vacant Bell Rock facilities might be suitable for boat-building, outboard motor repair and assembly and related activities. Potentially interested private companies should be canvassed. Such a project could be operated and serviced out of Fort Smith, as the road is good and 8 to 10 miles are a reasonable distance to commute.

Fort Resolution.

— Several fishing companies expressed an interest to have a collection station for operations exploiting the East Arm located at Fort Resolution rather than at Simpson Island or Pekanatui Point, where freezer and storage facilities are now located. This move should be encouraged as it could help also in the formation and successful operation of a new local fishing co-operative. Local employment would increase as Fort Resolution would then become the base for all East Arm fishing operations.

— Under present transportation conditions all possible efforts should be made to locate a resident medical doctor at Fort Resolution, as well as a nurse and a mature community health worker.

— The office of the Area Administrator should be moved from Pine Point to Fort Resolution. Though technically Fort Resolution can be administered from Pine Point, the same is true in reverse and as Pine Point poses few administrative problems and Fort Resolution many such a move is justified, particularly in view of the effect it would have on morale.

— Sawmill operation should continue to be kept apart from any community development schemes and from other commercial enterprises, such as the handicraft project. The latter is capable of considerable expansion. Marketing through TEAM should be pushed as well as through the two local outlets. As regards the operation of the sawmill itself, it is suggested that the co-op office be moved next to the garage or that the vacant RC hospital be used for that purpose. The trim-saw should be moved from the planer to the mill. Road improvements between the settlement and the mill site are urgently required and it is suggested that the maintenance of this road could be improved by better utilization of sawdust mill waste.

— The settlement urgently requires a new 40,000 gallon water reservoir supplied from the lake with proper mechanical and chemical filtration plant. This would be sufficient to supply running water to all dwellings though such a supply would aggravate the sewage disposal problem unless a complete utilidor system is installed.

— Differences in electric power rates for different users are currently a cause of much dissatisfaction. An attempt should be made to equalize rates. The additional power unit already on site should be installed immediately to make possible the extension of power supply to all dwellings having a fire marshals permit.

Other Locations.

— The portage on Pethei Peninsula between Gibraltar Point and Wildbread Bay should be blasted to cut travel time between Snowdrift and Reliance and improve exploitation of McLeod Bay. This could be carried out as a community development project. It appears that creation of this passage would be beneficial to the fish population.

— The airstrip at Snowdrift should be completed as soon as possible preferably as a community development or winter works project utilizing local labour.

— Power generation at Snowdrift should be expanded sufficiently to supply all dwellings. All consumption should be charged for.

— There has been considerable discussion in regard to the re-building of the school at Rocher River and it is felt that this would be justified at present, as the arguments advanced for re-activating the community through school construction appear to be based in regard to future regional development.

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APPENDIX

	Years observed	January	February	March	April	May	June	July	August	September	October	November	December	Year
Fort Reliance	5	-19	-8	7	28	44	54	63	63	50	31	15	-5	27
Fort Resolution	22	-10	-4	8	30	51	63	70	65	52	37	16	-3	31
Fort Smith	30	-5	2	18	38	57	68	74	69	54	39	17	1	36
Hay River	29	-2	2	14	33	50	61	70	66	55	40	17	2	34

Monthly and annual averages of DAILY MINIMUM temperature

[illegible]

Average monthly and annual RAINFALL in inches

	Years observed	January	February	March	April	May	June	July	August	September	October	November	December	Year
Fort Reliance	5	0.00	0.00	0.00	0.02	0.16	0.78	0.76	1.31	0.60	0.23	T	T	3.86
Fort Resolution	22	0.00	T	0.00	0.11	0.72	1.08	1.13	1.25	1.32	0.57	0.01	0.00	6.19
Fort Smith	29	0.01	T	T	0.13	0.90	1.41	1.99	1.65	1.43	0.42	0.02	0.01	7.97
Hay River	29	0.02	0.01	0.01	0.20	0.83	1.14	1.32	1.60	1.49	0.66	0.05	0.01	7.34

Average monthly and annual SNOWFALL in inches

Fort Reliance	5	4.6	5.5	4.4	3.2	3.1	0.1	T	0.0	4.2	8.7	11.0	6.9	51.7
Fort Resolution	22	6.1	6.2	5.2	3.3	1.3	0.0	0.0	0.0	1.0	5.4	14.4	7.7	50.6
Fort Smith	29	5.2	6.6	6.7	3.9	0.7	T	0.0	T	1.1	5.4	8.4	8.6	46.6
Hay River	29	6.5	5.5	4.9	4.6	1.6	0.3	0.0	0.0	0.2	4.9	10.4	7.9	46.8

Average monthly and annual TOTAL PRECIPITATION in inches

Fort Reliance	5	0.46	0.55	0.44	0.34	0.47	0.79	0.76	1.31	1.02	1.10	1.10	0.69	9.03
Fort Resolution	22	0.61	0.62	0.52	0.44	0.85	1.08	1.13	1.25	1.42	1.11	1.45	0.77	11.25
Fort Smith	29	0.53	0.66	0.67	0.52	0.97	1.41	1.99	1.65	1.54	0.96	0.86	0.87	12.63
Hay River	29	0.67	0.56	0.50	0.66	0.99	1.17	1.32	1.60	1.51	1.15	1.09	0.80	12.02

Average monthly and annual number of days with measurable RAIN

Fort Smith	10	*	*	0	0	7	6	11	10	10	4	*	1	51
Hay River	10	*	*	0	2	6	7	9	9	8	5	*	*	46

Average monthly and annual number of days with measurable SNOW

Fort Smith	10	7	6	7	3	1	-	-	-	1	6	9	9	49
Hay River	10	8	8	9	4	1	*	-	-	1	6	12	9	58

Average monthly and annual number of days with measurable precipitation of any sort

Fort Smith	10	7	6	7	4	8	6	11	10	11	10	9	9	98
Hay River	10	8	8	9	5	8	7	9	9	9	10	12	9	103

"T" indicates a trace of precipitation. In the case of rain or total precipitation, T indicates an average less than 0.005 of an inch, while for snow T indicates an average less than 0.05 of an inch.

AIRCRAFT MOVEMENTS BY CLASS AND TYPE OF OPERATION

Airport		Total Move- ments	Itinerant							Local
			Domestic				Trans- border	Gov't		
			Total Itinerant	Sched.	Other Comm.	Priv.	Private	Civ.	Mil.	
Fort Resolution	1963	530	529	206	156	81	6	74	6	1
	1964	641	641	204	249	90	8	90	-	-
	1965	909	909	440	270	71	24	104	-	-
	1966	1,035	1,035	434	292	241	-	52	16	-
	1967	874	874	312	364	110	4	32	52	-
Fort Smith	1963	4,208	4,184	2,258	1,209	435	8	241	33	24
	1964	5,923	5,919	2,103	3,012	457	20	319	8	4
	1965	5,294	5,280	2,058	2,252	622	2	286	60	14
	1966	4,457	4,440	1,687	1,619	634	-	275	225	18
	1967	3,241	3,239	1,525	1,143	277	-	272	22	2
Hay River	1963	4,333	2,695	475	1,280	762	-	142	36	1,638
	1964	4,299	3,734	688	1,911	914	-	213	8	565
	1965	5,660	5,019	1,048	3,109	625	2	235	-	641
	1966	6,454	5,410	1,091	3,207	909	-	196	7	1,044
	1967	5,403	4,751	1,071	2,778	752	-	137	13	652
Grand total for the three airports IN 1967		9,518	8,864	2,908	4,285	1,139	4	441	87	654

Source: DOT; The Aviation Statistics Centre

ITINERANT MOVEMENTS BY WEIGHT GROUP AND TYPE OF POWER PLANT

Airport		Total	Weight Groups							Type of Powerplant		
			0-4	5-9	10-19	20-39	40-79	80 & Over	Heli-copter	Fixed Wing		
										Piston	Turb	Jet
Fort Resolution	1963	529	143	167	4	95	120	-	-	529	-	-
	1964	641	208	158	31	126	118	-	2	639	-	-
	1965	909	205	442	168	92	2	-	4	891	14	-
	1966	1,035	369	158	206	300	2	-	10	1,025	-	-
	1967	874	250	202	160	124	138	-	4	736	134	-
Fort Smith	1963	4,184	825	807	14	563	983	992	30	4,152	2	-
	1964	5,919	1,268	1,691	4	975	784	1,197	17	5,902	-	-
	1965	5,280	1,476	1,429	14	782	376	1,203	36	5,241	1	2
	1966	4,440	1,345	1,088	34	561	457	955	19	4,407	12	2
	1967	3,239	821	681	22	228	779	708	28	2,618	582	11
Hay River	1963	2,695	983	865	31	375	441	-	34	2,661	-	-
	1964	3,734	1,312	1,272	143	576	431	-	45	3,684	5	-
	1965	5,019	2,040	1,554	287	494	644	-	574	4,445	-	-
	1966	5,410	2,129	1,564	472	458	787	-	656	4,745	7	2
	1967	4,751	1,622	1,276	367	383	1,101	2	422	3,648	679	2
Grand total for the three airports IN 1967		8,864	2,693	2,159	549	735	2,018	710	454	7,002	1,395	13

Government Pay Rates

Treasury Board effective April 1, 1967, approved the following rates of pay for employees in the undermentioned classes in the Northwest Territories:

Carpenter	\$3.56
*Cook, First Class	2.35
Driver	2.30
Electrician	3.95
Heavy Equipment Mechanic	2.95
Heavy Equipment Operator	2.90
Labourer	2.25
Lineman — (Electric)	3.30
Motor Mechanic	2.65
Oil Burner Mechanic	2.70
Painter	3.15
Plumber	3.90
Plumber and Steamfitter	3.90
Power Plant Operator	3.05
Refrigeration Mechanic	3.45
Sheet Metal Worker	3.56

*Plus free meals.

All these occupations are being actively pursued in the survey area.

CATALOGUE OF BUSINESSES

Commercial Enterprise by Sector

Commercial Fisheries			
	Ft. Smith	Hay River	Pine Point
Alaska Fisheries		1	
Carter Fisheries		1	
Menzies Fish Co. Ltd.		1	
Kucher and Trefiak Ltd.		1	
		<hr/> 4	

Farms

	Hay River	Salt River
Buffalo Crossing farm Ltd..		1
Paradise Garden	1	<hr/> 2

Mines and Mining Exploration

	Ft. Smith	Hay River	Pine Point
Cominco			1
Exploration Industries Ltd.		1	<u>1</u>
			2

CONTRACTORS

Building construction, general contractors

	Ft. Smith	Hay River	Pine Point
Cognier and Stewart Construction Ltd.		1	
Fort Smith Construction	1		
Peterson Construction Ltd.	1		
Territorial Construction	1		
		4	

General contractors
(other than building)

Jenkins Construction Ltd.	1		
Mix the Mover			1
Müller Construction	1		
Slave River Construction Ltd.	1		
Territorial Expeditors			<u>1</u>
			5

Lumber and wood products
(other than furniture)

	Ft. Smith	Hay River	Pine Point	Ft. Resolution	Grand Detour	Mile 18	Mile 11
Comet Construction Ltd.					1		
Fort Resolution Co-operative Ass. Ltd. (sawmill)				1			
WC Logging and Contracting Ltd.	1						
Eugene Patterson						1	
Ed Studney							<u>1</u>
							5

Special contractors

	FS	HR
Arctic Transit Mix	1	
Evans Electric	1	
Johnson Bert Painting	1	
Keith's Water Service		1
Lefebvre Painting and Interior Decorating		1
North Star Electric		<u>1</u>
		6

TOTAL ALL CONTRACTORS

20

SERVICES

Banks

	Ft. Smith	Hay River	Pine Point
Bank of Montreal			1
Canadian Imperial Bank of Commerce	1		
Royal Bank of Canada		1	
			<u>3</u>

Barber Shops

Herv's Barber Shop			1
Richard's Barber Shop	1		
			<u>2</u>

Beauty Salon

Bonnie's Beauty Salon	1		
Great Slave Beauty Salon			1
			<u>2</u>

Car, truck and trailer sales and rentals

	Ft. Smith	Hay River	Pine Point
Avis Car and Truck Rentals		1	
Frontenac Sales and Rentals		1	
J and E Rentals		1	
Misiak Bros. Rentals Ltd.		1	
Northwest Trailer Sales Ltd.		1	
Slave River Car Sales and Rentals	1		
Tilden		1	
			<u>7</u>

Chartered Accountant, Insurance, Notary Public, Real Estate

	FS	HR	
Berg Insurance		1	
Ernst & Ernst		1	
Johnson Insurance		1	
Mackenzie District Agencies Ltd.	1		
Wright Agencies		1	
			<u>5</u>

Clothing Store

Jacquelyne's Ladies Wear	1		
Ruth's Ready to Wear		1	
			<u>2</u>

Dentist

Dr. B.D. Friesen	1		
Dr. G. Olsen		1	
			<u>2</u>

Drugstore

Ring's Drug Store		2	
Wally's Drugs	1		
			<u>3</u>

Garages

	Ft. Smith	Hay River	Pine Point
B.J. Motors		1	
Channel Welding and Repair		1	
Fort Smith Garage	1		
Frontenac Sales and Rentals (Garage)		1	
J and E Rentals (Garage)		1	
Karl's garage	1		
Northern Service Center		1	
Territorial Motors Ltd.		1	
PP garage			<u>1</u>
			9

Handicraft Shop

Lucille's Handicraft	1
--------------------------------	---

Laundries and Dry Cleaning

Adelane's Laundromat	1	
Coin 'O' Mat	1	
Hay River Cleaners	1	<u>3</u>

Motion Picture

Igloo Theatres Ltd.	1	
Park Theatre	1	<u>2</u>

Newspaper and Printing

Boreal Press (Tapwe) ceased February 5, 1968 . . .	1	
Hay River News	1	
Norther' (ceased August 14, 1967)	1	<u>3</u>

General Store (Including groceries)

	Ft. Smith	Hay River	Pine Point	Ft. Resolute	Snow-drift	Reliance	Rocher River
Army's General Store Ltd.		1					
Cal-Van Caterers			1				
Chateau Wolverine						1	
De Melt's Fur Trading Post and Super Market							1
Godwin Stores Ltd.		2					
Hay River Meat Market		1					
The Bay (Hudson Bay Company)	1	1		1	1		
Kaesser's Store Ltd.	1						
McPherson				1			<u>13</u>

Hardware Store

Don Wright Hardware Ltd.		1	
Igloo Building Supplies		1	
Spence's Hardware Ltd.	1		<u>3</u>

Hotels, Motels and Fishing Lodges

			Enterprise	Great Slave Lake
Ace Motel (18 units)	1			
Arctic Star Lodge				1
El Camino Motel (8 units)			1	
Frontier Fishing Lodge (capacity 24)		1		
Great Slave Lodge				1
Hay River Hotel (37 rooms)	1			
Hay River Motel (13 units)	1			
Kozy Kourt Hotel	1			
Pine Point Hotel Ltd.		1		
Pinecrest Hotel	1			
Ptarmigan Inn	1			
Trophy Lodge (capacity 12)			1	
				<u>12</u>

Oil Agency

	Ft. Smith	Hay River	Pine Point	Enterprise	Alberta- NWT border
British American Oil	1	1		1	
Imperial Esso Oil	1	1		1	
North 60'					1
Pacific 66		1			
Pine Point Gasoline Depot			1		
Shell Bulk Ltd.		1			
					<u>10</u>

Pool and Billiard Halls

			Ft. Resolution
Ft. Smith Pool	1		
Hay River Pool		1	
McPherson Pool			<u>1</u>
			3

Propane Gas Service

Canadian Propane Ltd.		1	
Cooke's Propane	1		
			<u>2</u>

Taxi

Harry's Taxi		1	
Star Taxi	1		
United Taxi	1		
Yellow Cab	1		
			<u>1</u>
			5

Restaurants

	Ft. Smith	Hay River	Pine Point	Ft. Resolution	Border
Capital Cafe	1				
Chow's Cafe		1			
Empire Cafe		1			
FR Cafe				1	
HR Hotel's Restaurant		1			
Kozy Kourt		1			
McPherson				1	
M and A Delicatessen		1			
Northland Restaurant	1				
North 60' Inn					1
Pine Point Restaurant			1		
Ptarmigan Inn		1			
Rescafe				1	
Cal-Van Caterers			1		
					<hr/> 14
TOTAL ALL SERVICES	106				

TRANSPORTATION

Transportation by Air

	Ft. Smith	Hay River	Pine Point	Ft. Resolution	Snowdrift
Carter Air Service (U-Fly)		1			
Central Western Air Freight Ltd.	1				
Cateway Aviation Ltd.	1				
Keir Air Transport		1			
Klondike Helicopters Ltd.	1				
McPhail Air Services (Helicopter + fixed wing)		1			
Northern Mountain Airlines		1			
Northward Aviation Ltd.	1	1			
Pacific Western Airlines Ltd.	1	1		1	
Ptarmigan Airways Ltd.					1
Spartan Air Services		1			
					<hr/> 11

Transportation by Highway and Railway

	Ft. Smith	Hay River	Pine Point	Enterprise	N.W.T. — Alberta border
Byer's Transport Ltd.	1	1	1	1	
Canadian Coachway Ltd. (Bus schedule + charter)		1	1	1	1
Great Slave Lake Railway Company		1	1	1	
Grimshaw Trucking and Distributing Co. Ltd.	1	1	1		
Hay River Truck Lines		1	1		
Merv's Truck Service Ltd.		1			
Monarch Transport Ltd.	1				

7

Transportation by Water

	Ft. Smith	Hay River	Bell Rock
Northern Transportation Co. Ltd.	1	1	1
TOTAL TRANSPORTATION			19

Telecommunications

	Ft. Smith	Hay River
Canadian National Telecommunications	1	1

Electric Power

	Entreprise	Ft. Smith	Hay River	Pine Point	Ft. Resolution	Snow-drift
Northern Canada Power Commission		1		1	1	
Northland Utilities	1		1			
I.A. & N.D.						1
						3

GRAND TOTAL COMMERCIAL ENTERPRISES

157

With some minor exception (bakery, fur garment manufacture) the area has all the varieties of businesses that are found in the Canadian North.

APPENDIX VI

RATINGS OF POTENTIALLY ARABLE SOILS IN THE SLAVE RIVER LOWLANDS
(BETWEEN FORT SMITH AND GREAT SLAVE LAKE)

Rating	Area of Arability Classes	
	Acres	Per Cent
Class 1		
Little Buffalo	12,600	0.6
Slave	384,000	17.7
	397,300	18.3
(arable — no limitations)		
Class 2		
(moderate limitation)	1,182,400	54.3
Class 3		
(requires intensive management)	116,300	5.4
Class 4		
(non-arable)	356,000	16.2
Lakes and Rivers	127,000	5.8
TOTAL	2,179,000	100.0

Source: Ray JB + Leahey A: *Reconnaissance Soil Survey of the Slave River Lowlands in the N.W.T. of Canada*; Department of Agriculture 1957

SOILS OF THE SLAVE RIVER LOWLAND

Soil	Some profile characteristics of upper 3"	Natural drainage	Principal vegetative species	Soil group	Estimated total acreage	Arability for crops suitable for the area
Slave	Thin organic horizon over dark brown to black clay. The clay parent material is calcareous and is underlain by sandy loam.	Well to imperfectly drained	Spruce, aspen, black poplar, willow, birch, sheperdia, rose, grass, fireweed	Alluvial	342,600	Arable
Little Buffalo	Thin organic horizon over dark grey brown loam and light clay loam over calcareous silty loam	Well to imperfectly drained	Spruce, aspen, black poplar, willow, alder, birch, sheperdia, birch grass	Alluvial	12,600	Arable
Fort Smith	Thin organic horizon over brown sandy loam underlain by calcareous sandy loam	Well drained	Pine, aspen, sheperdia, grass, rose, fireweed	Brown wooded	49,100	Arable with severe limitations
Fort Resolution	Thick moss cover over very dark brown loamy sand over grey calcareous loamy sand. Permafrost present	Imperfectly drained	Spruce, birch, black poplar, willow, moss, fireweed, sheperdia	Alluvial	67,200	Arable with severe limitations

Horizon Depth"	Texture	pH	Bulk density	Grams per 100 cc of soil						clay/ nitrogen
				Organic matter	Nitrogen	Phosphorus	Organic matter	Nitrogen	Phosphorus	
Slave series sampled on Long Island										
2	2	OH	ND	35.6	0.79	0.06	ND	ND	ND	26.1
3	0-8	SiCl	0.52	16.8	0.45	0.07	8.7	0.23	0.04	21.6
4	8-20	SiCL	0.81	9.8	0.29	0.07	7.9	0.24	0.06	19.6
Little Buffalo series sampled near lower rapids on Little Buffalo River										
2	0-6	L	0.36	18.5	0.61	0.10	6.6	0.22	0.04	17.6
3	6-12	Lt.CL	0.69	13.0	0.48	0.09	9.0	0.32	0.07	15.7
4	12-18	Lt.CL	0.61	16.0	0.68	0.11	9.1	0.41	0.06	12.8
6	20-26	SiC	0.87	6.4	0.23	0.07	5.6	0.20	0.06	16.1
Grey wooded soil on silty clay alluvium sampled at mile 5 from HR										
A0	2	OM	0.09	73.3	1.53	0.17	6.6	0.14	0.02	
A2	0-4	L	1.14	1.4	0.07	0.06	1.6	0.08	0.07	
A21	5-10	SiCL	1.43	1.0	0.09	0.04	1.4	0.13	0.06	
B22	10-14	SiC	1.47	0.8	0.06	0.05	1.2	0.09	0.07	
C	17-20	SiC	1.36	1.4	0.07	0.07	1.9	0.10	0.10	
Thin peat on silty clay alluvium sampled at mile 68 from HR										
	0-6	Moss	4.2	0.04	0.63	ND	3.8	0.03		87
	6-8	Peat	4.9	0.11	1.72	ND	8.9	0.19		27
	8-10	C	5.0	ND	0.36	ND	—	—		14.5
	10-18	C	5.2	1.19	0.12	ND	3.0	0.14		12.2
C	= clay									
OM	= organic matter									
L	= loam									
SiCl	= silty clay loam									
SiC	= silty clay									
Lt.CL	= light clay loam									
ND	= not determined									
Bulk density = weight of soil per unit volume.										

pH: The intensity of soil acidity or alkalinity is expressed in pH. A pH of 7.0 is neutral; lower values indicate acidity and higher values alkalinity. The desirable range for cultivated soils in the area is from moderately acid pH 5.6 to slightly alkaline pH 7.8. The two samples analyzed, with one exception have, on cultivation, surface soils falling within this pH range. The Slave soil is somewhat below the range. However, these figures were obtained on virgin samples and similar soils when cultivated become less acidic. Therefore the low pH figures in the survey area are favourable for agriculture.

Lower Slave River Timber Estimates

Spruce Only

Block Name	Cutting No.	Area 70 Ft.	Acres 80 Ft.+	Stock MFBM 70 Ft.	Stock MFBM 80 Ft.+
Grand Detour	1	597	947	2,180	9,013
	2	441	1,106	1,799	12,877
	3	398	876	2,039	8,364
	4	224	610	1,359	7,909
Total		1,660	3,539	7,377	38,163
Brule Point	1	131	131	573	3,234
	2	144	97	704	1,240
	3	82	199	296	2,247
Total		357	643	1,573	6,721
Wynn	1	356	638	1,710	9,809
	2	67	105	185	730
Total		423	743	1,895	10,539
Pointe Ennuyeuse	1	812	803	3,932	9,630
	2	110	228	478	2,554
Total		922	1,031	4,410	12,184
Long Island	1	218	614	728	6,497
Total		218	614	728	6,497
Nagle Block	1	386	386	1,252	4,431
	2	274	617	601	5,638
	3	208	199	808	2,327
	4	600	189	2,964	2,418
	5	375	193	1,928	1,717
	6	46	210	230	2,661
Total		1,889	1,794	7,783	19,192
Grand Total		5,469	8,364	23,766	93,296

N.B.: 70-foot height corresponds approximately to Cutting Class 4; 80-foot+ to Cutting Classes 5, 6.

Summary of Lower Slave River Estimates

Spruce Only – Height Class Area, Volume per Acre

Block Name	Area 70 Ft.	Acres 80 Ft.	MFBM 70 Ft.	per Acre 80 Ft.
Grand Detour	1,660	3,539	4.4	10.8
Brule Point	357	643	4.4	10.5
Wynn	423	743	4.5	14.2
Pointe Ennuyeuse	922	1,031	4.8	11.8
Long Island	218	614	3.3	10.6
Nagle	1,889	1,794	4.1	10.7
Total	5,469	8,364	4.3	11.1

APPENDIX VIII

SAWMILLS OPERATING IN THE SURVEY AREA

Operator and/or Owner	Geographic Location	Map Co-Ordinates		Type of Mill	Anticipated Production F.B.M.
		North	West		
Mr. Martin Dillman, Comet Construction Ltd., Fort Smith	Grand Detour, Slave River	60°19'	112°29'	Semi Portable	1,500,000
Fort Resolution Co-op, Fort Resolution	Fort Resolution, Nagel Channel	61°14'	113°34'	Semi Portable	3,000,000
		61°11'	113°41'	Circular with Planer	
Mr. Eugene Patterson, Hay River	Mile 18, Mackenzie Highway	60°11'	116°40'	Portable 42"	150,000
				Head Saw Powered by D-4 Cat	150,000
Mr. Ed Studney, Hay River	Mile 11, Mackenzie Highway	60°06'	116°44'	48" Coutts Portable Powered by Wheeled Tractor	50,000
TOTAL					4,700,000

DEPARTMENT OF NATIONAL REVENUE

EXCISE

FUR VALUES

The Minister has determined the current market values of furs in their raw state for the purpose of computing sales tax payable at the time of delivery to be as follows, effective 1st January 1968:

Fur Category	Per Raw Skin Value
Badger	\$ 4.00
Bear	25.00
Beaver	10.00
Cats, Ringtail	1.00
Chinchilla	10.00
Deer, Moose, Caribou	10.00
Ermine	1.00
Fisher	10.00
Fitch	1.00
Fox	6.00
Goat, Rocky Mountain	10.00
Kid, China	.25
Kolinsky	.80
Lynx (including Lynx Cats)	12.00
Marmot	1.00
Marten	5.00
Mink	8.00
Muskrat	.75
Nutria	1.00
Opossums	.50
Otter	12.00
Persian Lamb (black, grey, all colours)	4.00
Rabbit and Hare (including Chinchilla Rabbit)	.30
Raccoon	1.25
Seal, Hair (including Whitecoats)	6.00
Skunk	.50
Spotted Goods (Leopard, Ocelot, Jaguar, Spotted Cats, Tiger, etc.)	8.00
Squirrel	.40
Weasel, China	.40
Weasel, Japanese (wild)	.80
Wolf	4.00
Wolverine	12.00

Fur Export Record

This sheet indicates the number of pelts taken in each species and the average value per skin. It also contains the fur export revenue for the years '58-'59 to '61-'62; the number of wolf bounties claimed in 1965 (only year with bounty); and the number of Indians and whites holding general hunting licenses in each location. The number of people actively trapping or hunting mainly by hunting and gathering will be less than the number of licenses.

1 Average Value Line

a) The "Average Value" line from '61-'62 to '65-'66 gives the averages for the Mackenzie District previous to that year the average was a DFB S. figure for the whole N.W.T.

	Beaver	Coyote	Fox	Black	Blue	Cross	Red	Silver	White	Lynx	Marten	Mink	Muskbat	Otter	Skunk	Weasel	Wolf	Womanne	Fur Export Revenue	Wolf Bounties	White	Indian	Estimate		
Hay River	4 708	2	4	-	-	-	1	1	1	6	26	104	7,564	10	1,652	399	11	1	1	1	23	32	43	3	
Reliance-Snowdrift	149	96	-	-	-	-	1	1	14	19	217	375	4,021	23	1,431	379	11	2	1	1	23	32	43	3	
Resolution-Rocher River	10 677	6	2	1	8	1	8	86	18	286	38,444	14	712	944	11	4	2	61	64	2	61	64	1	1	
Fort Smith	14,35	11,27	7,44	9,44	-	-	-	11,87	8,47	10,02	17,98	24,40	12,66	18,07	1,32	23,45	-	1,20	63	29,43	231,6	70	41	-	
Average Value 1965-66	14,35	11,27	7,44	9,44	-	-	-	11,87	8,47	10,02	17,98	24,40	12,66	18,07	1,32	23,45	-	1,20	63	29,43	231,6	70	41	-	
Hay River	4 431	1	5	-	-	-	2	18	-	6	83	194	1,978	13	1,352	129	15	1	1	1	33	65	-	1	
Reliance-Snowdrift	1+15	69	-	-	-	-	1	132	9	115	253	2,019	20	1,020	258	16	3	1	1	1	33	65	-	1	
Resolution-Rocher River	12 669	7	-	1	1	1	18	33	7	311	8,296	4	974	1,312	2	-	1	1	1	1	78	65	-	1	
Average Value 64-65	14,12	10,01	3,92	5,83	8,00	4,12	4,93	8,25	11,12	11,38	9,90	9,14	97	193,4	1	39	48	18,54	15,26	1	172	42	-	1	
Furs sold to traders	13,00	11,14	4,12	6,75	9,21	4,41	5,03	6,00	11,38	11,25	10,07	19,19	38	46	15,44	38	60	19,17	17,40	1	33	63	-	1	
Hay River	4 376	-	10	-	1	6	2	-	130	86	432	992	9	650	611	6	2	1	1	1	33	63	-	1	
Reliance-Snowdrift	-	97	7	-	1	14	12	-	42	248	131	612	13	820	269	2	1	1	1	1	2	53	-	1	
Resolution-Rocher River	4 970	12	9	-	1	1	1	2	77	26	348	2,812	39	309	607	5	2	1	1	1	49	40	-	1	
Fort Smith	11,40	12,09	4,50	10,43	5,00	8,44	7,0	4,71	8,02	15,91	11,98	10,99	26,57	1,08	19,24	39	67	12,45	12,73	1	163	-	-	1	
Average Value 63-64	10,57	15,38	4,93	10,45	8,54	5,79	5,23	7,74	15,00	10,40	9,273	1,08	20,50	-	-	39	65	11,64	17,33	1	163	-	-	1	
Furs sold to traders	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Hay River	6 714	1	2	-	2	5	-	27	42	931	785	16	1,347	244	11	-	1	1	1	1	30	65	-	1	
Reliance-Snowdrift	-	11	2	-	2	5	-	33	49	1,435	1,810	14	819	1,557	8	4	1	1	1	1	30	65	-	1	
Resolution-Rocher River	9 948	7	3	-	2	7	8	15	2	164	8	700	1,182	29	739	410	4	1	1	1	59	42	-	1	
Fort Smith	12,76	1,277	6,02	5	-	2	14	15	2	8	2,244	1,088	16,12	27	467	1,067	17	1	1	1	59	42	-	1	
Average Value 62-63	10,78	12,62	4,05	10,36	8,54	4,34	4,60	15,54	8,81	8,25	20,54	1,08	20,50	-	-	39	67	12,45	12,73	1	163	-	-	1	
Furs sold to traders	10,29	12,67	4,31	7,02	15,24	8,52	4,76	15,24	8,52	15,24	8,52	15,24	8,52	15,24	8,52	15,24	8,52	15,24	8,52	15,24	8,52	15,24	8,52	15,24	
Hay River	3 763	-	3	-	2	9	-	-	318	46	421	4,939	15	2,709	153	7	1	1	1	1	34	52	-	1	
Reliance-Snowdrift	1 49	-	-	-	6	4	16	1	565	36	178	341	13	1,486	113	3	1	1	1	1	34	52	-	1	
Resolution-Rocher River	11 832	-	2	-	6	13,000	791,945	3,658	23	1,803	451	-	-	4	3,576	97	61	1	1	1	34	52	-	1	
Fort Smith	10,00	11,25	2,501	1,22	3,23	2,85	3,05	7,29	11,38	7,29	6,30	18,93	16,22	2,84	85	9	909	11,13	1,444	72	31	46	-	1	
Average Value 61-62	10,00	11,25	2,501	1,22	3,23	2,85	3,05	7,29	11,38	7,29	6,30	18,93	16,22	2,84	85	9	909	11,13	1,444	72	31	46	-	1	
Hay River	1 480	-	1	-	4	4	299	37	278	373	1,481	7	851	89	109	77	966	79	1	1	31	46	-	1	
Reliance-Snowdrift	-	42	-	-	1	12	-	4	1,095	86	1,902	10,254	21	3,090	850	2	2	3,054	2	2	3,054	2	39	-	1
Resolution-Rocher River	5 1,921	-	1	-	1	1	-	2	750	55	1,371	1,247	14	2,514	1,781	1	1	2,504	8	1	2,504	8	67	-	1
Fort Smith	10,00	12,50	-	-	2	18	-	2	750	55	1,371	1,247	14	2,514	1,781	1	1	2,504	8	1	2,504	8	67	-	1
Average Value 60-61	10,00	12,50	-	-	2	18	-	2	750	55	1,371	1,247	14	2,514	1,781	1	1	2,504	8	1	2,504	8	67	-	1
Hay River	-	844	-	1	-	3	7	-	210	137	1,161	6,997	23	4,812	1,098	1	1	2,504	8	1	2,504	8	67	-	1
Reliance-Snowdrift	-	17	-	-	6	7	21	-	61	29	406	290	540	8	448	89	28	5	381	18	1	29	43	-	1
Resolution-Rocher River	-	17	-	-	2	18	-	2	750	55	1,371	1,247	14	2,514	1,781	1	1	2,504	8	1	2,504	8	67	-	1
Fort Smith	-	17	-	-	2	18	-	2	750	55	1,371	1,247	14	2,514	1,781	1	1	2,504	8	1	2,504	8	67	-	1
Average Value 59-60	10,00	12,50	-	-	2	18	-	2	750	55	1,371	1,247	14	2,514	1,781	1	1	2,504	8	1	2,504	8	67	-	1
Hay River	3 536	1	-	-	8,00	4,22	4,22	25	13,00	750	2,50	60	22,00	1	35	0,70	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	
Reliance-Snowdrift	-	76	-	-	5	7	13	-	300	4	197	195	3,711	7	2,681	425	3	-	139	48	32	45	-	1	
Resolution-Rocher River	-	76	-	-	5	7	13	-	300	4	197	195	3,711	7	2,681	425	3	-	139	48	32	45	-	1	
Fort Smith	-	76	-	-	5	7	13	-	300	4	197	195	3,711	7	2,681	425	3	-	139	48	32	45	-	1	
Average Value 58-59	2,60	919	17,20	8,00	1,98	1,98	3,00	19,63	9,01	6,51	18,94	0,60	20,36	0,32	0,60	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	
Hay River	1 442	-	-	-	2	9	23	-	100	7	17	-	220	5	2,544	40	3	2	2	2	2	2	2	2	
Reliance-Snowdrift	-	442	-	-	2	9	23	-	100	7	17	-	220	5	2,544	40	3	2	2	2	2	2	2	2	
Resolution-Rocher River	-	442	-	-	2	9	23	-	100	7	17	-	220	5	2,544	40	3	2	2	2	2	2	2	2	
Fort Smith	-	442	-	-	2	9	23	-	100	7	17	-	220	5	2,544	40	3	2	2	2	2	2	2	2	
Average Value 57-58	2,60	919	17,20	8,00	1,98	1,98	3,00	19,63	9,01	6,51	18,94	0,60	20,36	0,32	0,60	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10	
Hay River	-	396	-	1	-	5,00	3,00	1,61	15,26	6,89	6,71	19,82	0,48	19,79	0,31	0,71	5,25	15,00	15,00	15,00	15,00	15,00	15,00	15,00	
Reliance-Snowdrift	-	396	-	1	-	5,00	3,00	1,61	15,26	6,89	6,71	19,82	0,48	19,79	0,31	0,71	5,25	15,00	15,00	15,00	15,00	15,00	15,00	15,00	
Resolution-Rocher River	-	396	-	1	-	5,00	3,00	1,61	15,26	6,89	6,71	19,82	0,48	19,79	0,31	0,71	5,25	15,00	15,00	15,00	15,00	15,00	15,00	15,00	
Fort Smith	-	396	-	1	-	5,00	3,00	1,61	15,26	6,89	6,71	19,82	0,48	19,79	0,31	0,71	5,25	15,00	15,00	15,00	15,00	15,00	15,00	15,00	
Average Value 56-57	-	264	-	2	-	-	-	-	6	2	9	100	1,835	-	-	-	-	-	-	-	-	-	-	-	

b) The "Hay River and Reliance-Snowdrift" lines of 1961-62 contain the average value per skin paid at the post as well as the number of skins bought

c) The line "Furs sold to Traders" contains the average value paid for fur by Traders i.e. non-HBC in the Mackenzie District.

2. In calculating the value of wolves the value of the skins sold and the value of the bounties claimed (Note - more bounties than skins) must be added together.

General Hunting Licenses

Resident licence – no record kept of take of game

Non resident – no indication of region where game taken

Information taken from GAME ORDINANCE LICENCE RECORD



